

3. EXPOSURE MONITORING AND SAMPLING

There is a potential for exposure to chemical, radiological and physical hazards during VES-SFE-20 Project activities and affects all project personnel conducting remedial activities. The mitigation strategy for these hazards includes refining work control zones (see Section 7), using engineering and administrative controls, worker training, and wearing PPE. Monitoring and sampling will be used during project tasks to (1) assess the effectiveness of these controls, (2) determine the type of PPE needed for individual tasks, and (3) determine the need for upgrading and downgrading of PPE as described in Section 5. Monitoring with direct-reading instruments will be conducted as deemed appropriate to provide Radiological Control (RadCon) and IH personnel with real-time data to assess effectiveness of these control measures.

Tables provided in this section present the strategy for conducting exposure monitoring and sampling. These include

- Table 3-1, “Tasks and hazards to be monitored, frequency, and monitoring instrument category”
- Table 3-2, “Monitoring instrument category and description”
- Table 3-3, “Action levels and associated responses for project hazards.”

3.1 Action Limits

Action limits (see Table 3-3) serve as the initial limits for specific project activities where refinement of work control zones, engineering and administrative controls, worker training, and the use of protective equipment is necessary to mitigate exposures to personnel. Monitoring results at or above an action limit, identified through exposure monitoring, will initiate additional evaluations including consideration for improved engineering controls, administrative controls, reevaluation of PPE, and probable need for additional exposure monitoring based on IH recommendations. Action limits may be adjusted based on changing site conditions, exposure mitigation practices, and PPE levels.

3.2 Environmental and Personnel Monitoring

Radiological Control and IH personnel will conduct initial and periodic monitoring of project activities with direct-reading instruments, collect swipes, and conduct full- and partial-period air sampling, as deemed appropriate, in accordance with the applicable company policies and procedures. As new remedial activities are planned or hazards are introduced, they will be evaluated and controlled in accordance with applicable company policies and procedures.

Substance-specific standard monitoring established by OSHA for asbestos, cadmium, methylene chloride, and formaldehyde will be conducted in accordance with regulatory requirements to quantify exposures based on exposure assessments and IH professional judgment. Instrumentation listed in Table 3-2 will be selected based on the site-specific conditions and contaminants associated with project tasks. The RCT and IH will be responsible for determining the best monitoring technique for radiological and nonradiological contaminants (respectively) based on project site-specific conditions. Safety hazards and other physical hazards will be monitored and mitigated as outlined in Section 2.

Table 3-1. Tasks and hazards to be monitored, frequency, and monitoring instrument category.

Tasks	Hazard(s) Monitored ^a	Instrument Category Used
Phase I activities	Ionizing radiation—(alpha, beta, gamma)	1
	Radionuclide contamination—(alpha, beta, gamma)	2
	Organic solvents (including methylene chloride and formaldehyde)	3, 4
	Metals, particulates, and fibers (including cadmium and asbestos)	3, 4
	Respirable dust—silica (area and personal)	3, 5
	Hazardous atmosphere (confined space)	6 ^a
	Hazardous noise	7
	Ergonomics, repetitive motion, lifting	8
	Heat and cold stress	9
Phase II activities	Ionizing radiation—(alpha, beta, gamma)	1
	Radionuclide contamination—(alpha, beta, gamma)	2
	Organic solvents (including methylene chloride and formaldehyde)	3, 4
	Metals, particulates, and fibers (including cadmium and asbestos)	3, 4
	Respirable dust—(area and personal)	4, 5
	Hazardous atmosphere (confined space)	6 ^a
	Hazardous noise	7
	Ergonomics, repetitive motion, lifting	8
	Heat and cold stress	9
Decontamination	Ionizing radiation—(alpha, beta, gamma)	1
	Radionuclide contamination—(alpha, beta, gamma)	2
	Organic solvents (including methylene chloride and formaldehyde)	3, 4
	Metals, particulates, and fibers (including cadmium and asbestos)	3, 4
	Hazardous noise	7
	Ergonomics, repetitive motion, lifting	8
	Heat and cold stress	9

a. Optional sensors based on site-specific contaminants.

Table 3-2. Monitoring instrument category and description.

Instrument Category	Instrument Category Number Description ^a
1	(Alpha) count rate—Bicron NE/Electra (DP-6 or AP-5 probe) or equivalent Stationary—Eberline RM-25 (HP-380AB or HP-380A probe) or equivalent (Beta-gamma) count rate—Bicron NE/Electra (DP-6, BP-17 probes) or equivalent Stationary—Eberline RM-25 (HP-360AB probe) or equivalent
2	CAM—ALPHA 6-A-1 (in-line and radial sample heads, pump, RS-485) or equivalent (as required) CAM (beta)—AMS-4 (in-line and radial head, pump RS-485) or equivalent (as required) Grab sampler—SAIC H-810 or equivalent
3	Organic vapor—Direct reading instruments (photoionization detector, flame ionization detector, or infrared detector) detector tubes or grab samples Dust—Direct-reading instrument (miniram or equivalent)
4	Organic vapors, metals, and fibers—Personal sampling pumps with appropriate media for partial and full period sampling using NIOSH or OSHA-validated methods
5	Silica dust, respirable particulates—NIOSH 7500, NIOSH 0600 or equivalent, personal sampling pump, with cyclone, full-period sampling
6	Oxygen and LEL multi-gas instrument (MSA 361 or equivalent) with additional sensors for expected atmospheric contaminants
7	ANSI Type S2A sound level meter or Acoustical Society of America S1.25-1991 dosimeter (A-weighted scale for TWA dosimetry, C-weighted for impact dominant sound environments)
8	Observation and ergonomic assessment of activities in accordance with applicable company policies and procedures and ACGIH TLV
9	Heat stress—wet-bulb globe temperature, body weight, fluid intake Cold stress—ambient air temperature, wind chill charts

a. Equivalent instrumentation other than those listed may be used.

ACGIH = American Conference of Governmental Industrial Hygienists

ANSI = American National Standards Institute

CAM = continuous air monitor

LEL = lower exposure limit

NIOSH = National Institute for Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

TLV = threshold limit value

TWA = time-weighted average

Table 3-3. Action levels and associated responses for project hazards.

Contaminant or Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Nonradiological nuisance particulates (particulates not otherwise specified)	>10 mg/m ³ (inhalable fraction) >3 mg/m ³ (respirable fraction)	<ol style="list-style-type: none"> 1. Substitute equipment or change method to reduce emissions at source 2. Verify engineering control operation (where in place) or institute engineering controls 3. Evaluate air movement (wind) conditions and reschedule tasks or reposition personnel to upwind position of source 4. Move operation to alternant location (with engineering controls if possible) 5. Use wetting or misting methods to minimize dust and particulate matter 6. <u>IF</u> wetting or misting methods prove ineffective, <u>THEN</u> don respiratory protection^a (as directed by IH).
Nonradiological airborne contaminant (chemical, dust fume, fiber, or particulate)	<p>Based on individual contaminant exposure limit (ACGIH TLV or OSHA PEL) and 29 CFR 1910 or 29 CFR 1926 substance-specific requirements.</p> <p>Generally, sustained levels at the TLV or PEL in the worker's breathing zone for 2 minutes should be used as action limit. Where ceiling values or OSHA substance-specific action limit exists, use these values.</p>	<ol style="list-style-type: none"> 1. Substitute equipment or change method to reduce emissions at source 2. Verify engineering control operation (where in place) or institute engineering controls 3. Evaluate air movement (wind) conditions reschedule tasks or reposition personnel to upwind position of source 4. Move operation to alternant location (with engineering controls if possible) 5. <u>IF</u> engineering and administrative controls do not control contaminant below action or exposure limit, <u>THEN</u> reevaluate engineering and administrative controls or don respiratory protection^a (as directed by IH) 6. <u>IF</u> OSHA substance-specific standard action limit is exceeded, <u>THEN</u> initiate applicable medical surveillance requirements.

Table 3-3. (continued).

Contaminant or Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Nonradiological hazardous atmosphere Chemical IDLH, oxygen-deficient, oxygen-enriched, 10% of chemical LEL	<p>As defined in applicable company policies and procedures, confined spaces are based on criteria such as oxygen level, individual contaminant IDLH value, and LEL.</p> <p>NOTE: <i>No entry into an area or confined space containing a hazardous atmosphere is permitted without authorization from the project health and safety professionals in conjunction with the project manager or representative being informed.</i></p> <p><i>This authorization will be demonstrated through use of approved operational procedures, work order, or confined space entry permit.</i></p>	<ol style="list-style-type: none"> 1. Eliminate hazardous atmosphere through use of engineering controls. 2. Reschedule operations when area or space will not have hazardous atmosphere. 3. Evaluate space or area to be entered. <u>IF</u> the operation can be conducted outside the area or space, <u>THEN</u> perform operation without entry. 4. Measure atmosphere before initiating operation or personnel entry and verify acceptable entry conditions have been met (e.g., oxygen and LEL) and use engineering controls to maintain safe atmosphere and below specified exposure limit. Use permit system to authorize entry. 5. <u>IF</u> engineering control fails to control contaminant below safe atmospheric and exposure limit, <u>THEN</u> stop operation and evacuate personnel until safe atmosphere and specified entry conditions can be achieved. 6. <u>IF</u> IDLH atmosphere must be entered, <u>THEN</u> don appropriate air supplied respiratory protection (with escape capacity) and protective clothing.^b At least one stand-by person dressed in proper PPE must be present for each entrant. <p>NOTE: <i>The INEEL fire department also must be notified for any area or space entry into an IDLH atmosphere to ensure adequate rescue equipment and resources are in place.^c</i></p>

Table 3-3. (continued).

Contaminant or Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Airborne radioactivity (area or within the confined space)	As defined by applicable company policies and procedures.	1. Eliminate airborne radioactivity source through use of engineering controls and removable contamination lockdown spray.
	Concentrations ($\mu\text{Ci}/\text{cm}^3$) >30% of and derived air concentration value (10 CFR 835.603[d])	2. Reschedule operations when area or space following contamination lockdown spray application. 3. Evaluate space or area to be entered. <u>IF</u> the operation can be conducted outside the area or space, <u>THEN</u> perform operation without entry. 4. Conduct ALARA review and generate RWP with limiting conditions. ^c 5. Post as “Airborne Radioactivity Area”—required items: RW II training, personal dosimetry, RWP (with prejob briefing), don PPE, bioassay submittal (as required). 6. Determine airborne radioactivity and contamination levels before initiating operation or personnel entry and verify acceptable entry conditions have been met and use engineering controls to maintain safe atmosphere and below specified RWP limit. Use RWP to authorize work. 7. <u>IF</u> engineering control fails to control contaminant below RWP limiting condition limits, <u>THEN</u> stop operation and evacuate personnel until RWP limiting conditions can be achieved. 8. <u>IF</u> IDLH atmosphere must be entered, <u>THEN</u> don appropriate air supplied respiratory protection (with escape capacity) and protective clothing. ^b At least one stand-by person dressed in proper PPE must be present for each entrant.
NOTE: <i>The INEEL fire department also must be notified for any area or confined space entry into an IDLH atmosphere to ensure adequate rescue equipment and resources are in place.</i>		

Table 3-3. (continued).

Contaminant or Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Hazardous noise levels	<85 dBA 8-hour TWA, <84 dBA 10-hour TWA	No action.
	85 to 114 dBA	Hearing protection required to attenuate hazard to below 85 dBA 8-hour TWA or 84 dBA for 10-hour TWA (device noise reduction rating).
	(a) >115 dBA (b) >140 dBA	(a) Isolate source, evaluate noise reduction rating for single device, double protection as needed. (b) Control entry, isolate source, only approved double protection worn.
Radiation field	<5 mrem/hour	No action, no posting required.
	5 to 100 mrem/hour @ 30 cm (10 CFR 835.603(b))	Post as "Radiation Area"—Required items: Radiological Worker I or II training, RWP, personal dosimetry.
	>100 mrem to 500 rad @ 100 cm (10 CFR 835.603(b))	Post as "High Radiation Area"—Required items: RW II, RWP, alarming personal dosimetry, dose rate meter, and temporary shielding (as required).
Radionuclide contamination	1 to 100 times company values ^c (10 CFR 835.603(d))	Post as "Contamination Area"—Required items: RW II training, personal dosimetry, RWP, don PPE, bioassay submittal (as required).
	>100 times company values ^c (10 CFR 835.603(d))	Post as "High Contamination Area"—Required items: RW II training, personal dosimetry, RWP (with prejob briefing), don PPE, bioassay submittal (as required).
Other facility or INEEL alarms	Project operations, RWMC, or INEEL alarm	See Section 10.6 for emergency response action following facility or INEEL alarms. ^c

Table 3-3. (continued).

Contaminant or Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
<p>a. Level C respiratory protection will consist of a full-face respirator equipped with a HEPA filter cartridge as prescribed by the project IH and RadCon personnel (based on contaminant of concern). See Section 5 for additional Level C requirements.</p> <p>b. Protective clothing to be selected by the IH in consultation with RadCon personnel based on the nature of the task and contaminants and hazards to be encountered.</p> <p>c. Applicable company policies and procedures.</p>		
<p>ALARA = as low as reasonably achievable HEPA = high-efficiency particulate air IDLH = immediately dangerous to life or health IH = industrial hygienist INEEL = Idaho National Engineering and Environmental Laboratory LEL = lower exposure limit PEL = permissible exposure limit PPE = personal protective equipment RadCon = Radiological Control RW = radiological worker RWP = radiological work permit TWA = time-weighted average</p>		

3.2.1 Industrial Hygiene Area and Personal Monitoring and Instrument Calibration

The assigned Clean Close INTEC SP 6 IH will conduct full- and partial-period sampling of airborne contaminants and monitoring of physical agents during operations at a frequency deemed appropriate based on direct-reading instrument readings and changing conditions. The subcontractor is responsible for conducting contaminant monitoring of their employees. When performed, all air sampling will be conducted using applicable National Institute of Occupational Safety and Health (NIOSH), OSHA, or other validated method. Both personal and area sampling and remote-sensing monitoring may be conducted.

Various direct-reading instruments may be used to determine the presence of nonradiological and other physical agents. The frequency and type of sampling and monitoring will be determined by the Clean/Close INTEC SP 6 HSO in consultation with the project IH who will assess operation conditions, direct-reading instrument results, observation, professional judgment, and in accordance with applicable company policies and procedures.

All monitoring instruments will be maintained and calibrated in accordance with manufacturer recommendations, existing IH protocol, and in conformance with applicable company policies, procedures, and safety and health manuals. Calibration information, sampling and monitoring data, results from direct-reading instruments, and field observations will be recorded as directed in Section 12.

3.2.2 Area Radiological Monitoring and Instrument Calibration

Radiological monitoring of radiation and contamination will be conducted during project activities to ensure that personnel are given adequate protection from potential radiological exposure. Instruments and sampling methods listed in Table 3-2 may be used by the RCT as deemed appropriate and as required by general or task-specific RWPs. When conducted, monitoring will be performed in accordance with applicable company manuals. Radiological Control personnel will use data obtained from monitoring to evaluate the effectiveness of project engineering controls and decontamination methods and procedures and to alert personnel to potential radiation sources.

All portable survey instruments will be source-checked daily to ensure they are within specified baseline calibration limits. Accountable radioactive sources will be maintained in accordance with applicable company policies and procedures. All radiological survey and monitoring equipment will be maintained and calibrated in accordance with manufacturer recommendations, existing RadCon protocol, and applicable company policies, manuals, and procedures.

3.2.3 Personal Radiological Exposure Monitoring

Personal radiological monitoring will be conducted during project operational activities to quantify radiation exposure and potential for uptakes as stated in the general or task-specific RWP. This will include using external dosimetry, surface monitoring, and internal dosimetry methods where deemed appropriate to ensure that engineering controls, administrative controls, and work practices are effectively mitigating radiological hazards. General as low as reasonably achievable (ALARA) considerations are discussed further in Section 4.4.

3.2.3.1 External Dosimetry. Dosimetry requirements will be based on the radiation exposure potential during project activities. Personnel entering INTEC areas may be required to wear, as a minimum, of a thermoluminescent dosimeter and, at the project site, other personal dosimetry devices (e.g., albedo dosimetry) specified by RadCon personnel, in applicable project RWPs, and in accordance with the applicable company manuals.

The Radiological Control and Information Management System will be used to track external radiation exposures to project personnel and to serve as the administrative control mechanism for working in accordance with individual RWPs. Individual project personnel are responsible for ensuring all required personal information is provided to RadCon personnel for entry into Radiological Control and Information Management System and logging in when electronic dosimeters are used.

3.2.3.2 *Internal Monitoring.* The purpose of internal dose monitoring is to demonstrate effectiveness of contamination control practices and to document the nature and extent of any internal uptakes that may occur. Internal dose evaluation programs will be adequate to demonstrate compliance with 10 CFR 835, “Occupational Radiation Protection.” The requirement for whole body counts and bioassays will be based on project activities or specific tasks and will be determined by the assigned project radiological engineer. If bioassays are deemed appropriate by the radiological engineer, then requirements will be specified on the RWP, and personnel will be responsible for submitting required bioassay samples upon request.

4. ACCIDENT AND EXPOSURE PREVENTION

Activities of the VES-SFE-20 Project will present numerous potential safety, physical, chemical, and radiological hazards to personnel conducting these activities. It is critical that all personnel understand and follow the requirements of this HASP. Engineering controls, hazard isolation, specialized work practices, and the use of PPE will be implemented to eliminate or mitigate all potential hazards and exposures where feasible. However, all personnel are responsible for identification and control of project hazards associated with their work scope in accordance with Integrated Safety Management System (ISMS) principals and practices. **Hazards shall not be left unmitigated without implementing some manner of controls or abatement (e.g., engineering controls, administrative controls, or the use of PPE).** Project personnel should use STOP WORK authority in accordance with applicable company policies and procedures where it is perceived that imminent danger to personnel, equipment, or the environment exists.

This HASP will be used in conjunction with applicable company policies and procedures. Where appropriate, these policies and procedures will be incorporated into applicable work controls, JSAs, and RWP.

4.1 Voluntary Protection Program and Integrated Safety Management

The INEEL safety processes embrace the Voluntary Protection Program (VPP) and ISMS criteria, principles, and concepts to identify and mitigate hazards, thereby preventing accidents. All management and workers are responsible for implementing safety policies and programs and for maintaining a safe and healthful work environment. Project personnel will take a proactive role in preventing accidents, ensuring safe working conditions for themselves and fellow personnel, and complying with all work control documents, procedures, and permits.

The **ISMS** is focused on the **system** side of conducting operations, and **VPP** concentrates on the **people** aspect of conducting work. Both programs define work scope, identify and analyze hazards, and mitigate the hazards. Additional information on these programs is available on the INEEL Intranet. Bechtel BWXT Idaho, LLC, (current INEEL primary management and operating contractor) and its subcontractors participate in VPP and ISMS. This HASP includes all elements of both systems. The five key elements of VPP and ISMS and their corresponding HASP sections are listed in Table 4-1.

Table 4-1. Five key elements of the Voluntary Protection Program and the Integrated Safety Management System and corresponding health and safety plan sections.

Voluntary Protection Program	Integrated Safety Management System	Health and Safety Plan Section
Work site analysis	Define work scope	Section 1
	Analyze hazards	Sections 2, 3, 5, and 8
Hazard prevention and control	Develop and implement controls	Sections 2, 3, 4, 5, 7, 10, and 11
Safety and health training	Perform within work controls	Section 6
Employee involvement		Sections 2, 3, and 4
Management leadership	Provide feedback and improvement	Sections 6 and 9

4.2 General Safe-Work Practices

Sections 1 and 2 defined the project scope of work and associated project-specific hazards and mitigation. The following practices are mandatory for all project personnel to further reduce the likelihood of accidents and injuries. All visitors permitted to enter the project work areas must follow these requirements. Failure to follow these practices may result in permanent removal from the project and other disciplinary actions. The project FTL or STR and HSO will be responsible for ensuring that personnel adhere to the following safe-work practices at the project site:

- Limiting VES-SFE-20 Project area access to only authorized personnel in accordance with applicable company policies and procedures.
- Being aware of and complying with all safety signs, tags, barriers, and color codes as identified in applicable company policies and procedures.
- Being familiar with the physical characteristics of the project site and operational requirements, including, but not limited to the following:
 - Layout of the site, controlled areas, and egress routes
 - Project contaminants, hazards, and PPE requirements
 - Project and INTEC warning devices and alarms
 - Major INTEC roads and means of access to and from the project site
 - Location of facility emergency response equipment and first aid supplies.
- Being alert for dangerous situations (e.g., facility alarms, spills, accidents, and injuries) and reporting dangerous situations and near misses to the FTL or STR. The FTL or STR will make required notification in accordance with Section 10.
- Providing adequate information to oncoming shift personnel, including equipment and system status and inspection logs.
- Communicating about all systems, monitors, and safety components that are nonoperational and ensuring they are tagged as to their appropriate status (e.g., out-of-service or do not use).
- Planning and reviewing all project tasks before initiating the activity. Verifying all work control documents (e.g., the RWP, JSA, TPR, or work order) are current and correct for the activity. A prejob briefing is required to be conducted for all activities, in accordance with applicable company policies and procedures.
- Conducting all project tasks in accordance with the applicable TPR or work order. All activities will be conducted as stated in the applicable work control document including hold points and requirements for initials upon completion of certain steps (Use Type 1 TPR only) or work orders. Use Type 2 TPRs will be followed in a step-by-step sequence.

NOTE: *It is the responsibility of all operations personnel to identify, understand, and follow the appropriate work controls for their operational activities.*

- Having the authority to initiate STOP WORK actions in accordance with applicable company policies and procedures.
- Being familiar with project layout, tools, and equipment for which they are responsible to operate including operating limitations, maintenance, inspection, and manufacturer's operating instructions requirements. Using tools and equipment for their intended use only.
- Understanding the PPE requirements for all tasks as stated on the applicable JSA or work order, including proper use and limitation of all PPE. If questions arise about PPE, personnel will contact the assigned IH, safety professional, or RCT as applicable.
- Wearing all required dosimetry as stated on the RWP including any supplemental dosimetry (e.g., electronic dosimeters and albedo dosimeters).
- Responding to all radiological alarms including but not limited to continuous air monitors (CAMs), criticality system, radiation, and personal contamination monitor alarms.
- Avoiding direct contact with known contaminated surfaces. Personnel shall not walk through spills or other areas of contamination and shall avoid kneeling, leaning, or sitting on equipment or surfaces that may be contaminated.
- Not eating, drinking, chewing gum or tobacco, smoking, applying cosmetics or sunscreen, or performing any other practice that increases the probability of hand-to-mouth transfer and ingestion of materials in project areas, except within designated administrative break areas and only after having completed required contamination surveys.
- Practicing good housekeeping at all times including turning in or placing tools in the designated storage location after use and putting waste materials in the appropriate waste container or receptacle. If there is a question as to where to dispose of a waste article, personnel should ask the supervisor or the FTL.
- Identifying additional health, safety, and radiological requirements in project operations technical procedures and work packages.

4.3 Subcontractor Responsibilities

Where subcontractors are used to support VES-SFE-20 Project activities, they are responsible for meeting all applicable company policies and procedure flow-downs. Additionally, subcontractors are expected to take a proactive role in hazard identification and mitigation while conducting project support tasks. Subcontractors will report unmitigated hazards to the FTL or STR after taking protective actions (within the documented work controls) or emergency protective actions (e.g., evacuate from the area and warn others) as stated in Section 10.

4.4 Radiological and Chemical Exposure Prevention

Exposure to potential chemical, radiological, and physical hazards will be mitigated by using engineering controls, administrative controls, or PPE to prevent exposures where possible or minimize them where engineering controls are not feasible. All project personnel are responsible for understanding the hazard identification and mitigation measures necessary to prevent exposures and complying with hazard and exposure prevention requirements.

4.4.1 Radiological Exposure Prevention – ALARA Principles

Radiation exposure for VES-SFE-20 Project personnel will be controlled such that exposures are well below regulatory limits and that there is no radiation exposure without commensurate benefit.

Unplanned and preventable exposures are unacceptable. All project activities will be evaluated with the goal of eliminating or minimizing exposures. All personnel are responsible for following ALARA principles and practices, and personnel working at the project site must strive to keep both external and internal radiation doses ALARA by adopting the following external and internal ALARA practices.

NOTE: *The INTEC RadCon department shall establish work controls, initially and as an ongoing activity, throughout VES-SFE-20 Project activities. These work control efforts will ensure that workers are adequately protected from known sources of radiation in VES-SFE-20 Project activity areas. Issuing RWPs, establishing and posting radiological-controlled areas, and reviewing project activities by the INTEC ALARA committee will form the basis for controlling exposure to ionizing radiation during VES-SFE-20 Project activities.*

4.4.1.1 External Radiation Dose Reduction. Sources for external radiation exposure from radioisotopes in the waste are provided in Table 2-1. Anticipated exposure levels and limits will be quantified in RWPs. Radiological work permits will be written, as required, for project activities to define hold points, required dosimetry, RCT coverage, radiological-controlled areas, and radiological limiting conditions in accordance with applicable company policies and procedures. Radiological Control personnel will participate in the prejob briefing required by applicable company policies and procedures to ensure all personnel understand the dose rate limits and limiting conditions on the RWP. All personnel will be required to read and acknowledge the RWP requirements before being allowed to sign the RWP (or scan the RWP bar code) and obtain electronic dosimetry.

Basic protective measures used to reduce external doses include (1) minimizing time in radiation areas, (2) maximizing distance from known sources of radiation, and (3) using shielding whenever possible. These are discussed in the following subsections.

4.4.1.1.1 Methods for Minimizing Time Near Sources of Radiation—

- Plan and discuss the tasks before entering a radiation area (including having all equipment and tools prepared)
- Perform as much work as possible outside radiation areas and take advantage of lower dose rate areas (as shown on the radiological survey maps or as described in the RWP)
- Take the most direct route to the task area and work efficiently
- If problems occur in the radiation areas, hold technical discussions outside radiation areas, then return to the work area to complete the task
- If stay times are required, know your stay time and use appropriate signal and communication methods to let others in the area know when the stay time ends
- Respond to electronic dosimetry alarms by notifying others in the area and the RCT, and exit the radiation area through the designated entry and exit point
- Know your current dose and your ALARA goal—**do not exceed your dose limit.**

4.4.1.1.2 *Methods for Maximizing Distance from Sources of Radiation—*

- Use remote-operated equipment or controls to handle high radiation or contaminated items (where feasible)
- Stay as far away from the source of radiation as possible (extremely important for point sources where, in general, if the distance between the source is doubled, the dose rate falls to one-fourth of the original dose rate)
- Become familiar with the radiological survey map for the area in which work will be performed as well as high and low dose-rate locations, and take advantage of low dose-rate areas.

4.4.1.1.3 *Proper Use of Shielding—*

- Know what shielding is required and how it is to be used for each radiation source
- Take advantage of the equipment and enclosures for shielding from radiation sources
- Wear safety glasses to protect eyes from beta radiation.

4.4.1.2 *Internal Radiation Dose Reduction.* The potential for an internal radiation dose exists at the project from radionuclides in the tank and potentially in the vault area. An internal dose results when radioactive material is taken into the body. Radioactive material can enter the body through inhalation, ingestion, absorption through wounds, or injection from a puncture wound. Reducing the potential for radioactive material to enter the body is critical to avoid an internal dose. The following are methods to minimize internal radiation dose hazard:

- Know the potential and known contamination sources and locations, and minimize or avoid activities in those areas
- Wear protective clothing and respiratory protection as identified on the RWP, perform all respirator leak checks, and inspect all PPE before entering contaminated areas or areas with airborne radioactivity
- Use a HEPA filter exhaust system
- When inside contaminated areas, do not touch face (adjust glasses or PPE) or other exposed skin
- When exiting contaminated areas, follow all posted instructions and remove PPE in the order prescribed (if questions arise, consult RadCon personnel)
- Perform a whole body survey in accordance with posted instructions when exiting the contaminated area, then proceed directly to the personnel contamination monitor (or equivalent)
- Report all wounds or cuts (including scratches and scrapes) before entering radiologically contaminated areas
- Wash hands and face before eating, drinking, smoking, or engaging in other activities that may provide a pathway for contaminants.

Monitoring for radiation and contamination during protect tasks will be conducted in accordance with the RWP, applicable company policies, manuals, and procedures, and as deemed appropriate by RadCon personnel.

4.4.2 Avoiding Chemical and Physical Hazard Exposure

NOTE: *Identification and control of exposures to carcinogens (e.g., asbestos) will be conducted in accordance with applicable company policies and procedures.*

The VES-SFE-20 Project radiological activities will generate low-level, mixed low-level, hazardous, and Toxic Substances Control Act (15 USC § 2601 et seq., 1976) remediation waste. Most of the waste designated for ICDF disposal will be contaminated soil, but contaminated piping, debris, and CERCLA investigation-derived waste may also be included in the waste inventory.

The primary potential for exposure during VES-SFE-20 Project activities will be from contact with the tank sediments, vault contaminants, and associated contaminants on piping and debris. An additional exposure exists from chemicals brought to the project site in support of operational activities and from waste-handling and disposal operations. Project personnel will be required to have a material safety data sheet (MSDS) for all chemicals used at the project site in accordance with applicable company policies and procedures.

Threshold limit values (TLVs) or other occupation exposure limits have been established for numerous chemicals and physical agents (e.g., noise, heat, or cold stress) that may be encountered. These exposure limits provide guidelines in evaluating airborne, skin, and physical agent exposures. The TLVs represent levels and conditions under which it is believed that nearly all workers may be exposed day after day without adverse health effects. The TLV-TWA is a TWA concentration for a conventional 8-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed, day after day, without adverse health effects. Action limits (instantaneous concentrations for short time periods) have been established (see Section 3) to further reduce the likelihood of exceeding TLVs and for substances with OSHA substance-specific regulatory standards (see Section 8).

Controls will be employed during project activities to eliminate or mitigate chemical and physical hazards wherever feasible. The hierarchy of controls in order are (1) engineering controls, (2) administrative controls, and (3) PPE. In addition to these controls, technical procedures and work orders, hold points, training, and monitoring hazards will be used as appropriate to reduce exposure potential. Some methods of exposure avoidance include the following:

- Wearing all required PPE, inspecting all pieces before donning, and taping all seams
- Changing PPE if it becomes damaged or shows signs of degrading
- Minimizing time in direct contact with hazardous material or waste
- Doffing PPE following standard practices (i.e., rolling outer surfaces in and down) and following doffing sequence
- Washing hands and face before eating, drinking, smoking, or engaging in other activities that may provide a pathway for contaminants.

4.5 Buddy System

The two-person or buddy system will be used during some VES-SFE-20 Project activities. The buddy system is most often used during project activities requiring the use of protective clothing and respiratory protection where heat stress and other hazards may impede a person's ability to self-rescue or in immediately dangerous to life or health (IDLH) situations. The buddy system requires each employee to assess and monitor his or her buddy's mental and physical well being during the course of the operation. A buddy must be able to perform the following activities:

- Provide assistance if required
- Verify the integrity of PPE
- Observe his or her buddy for signs and symptoms of heat stress, cold stress, or contaminant exposure
- Notify other personnel in the area if emergency assistance is needed.

The need to use the buddy system during VES-SFE-20 Project activities will be determined by the HSO, IH, and safety engineer in conjunction with the FTL or STR and RadCon personnel.

5. PERSONAL PROTECTIVE EQUIPMENT

The VES-SFE-20 Project presents numerous potential industrial safety, radiological, nonradiological, and physical hazards to personnel conducting project activities. Applicable company policies and procedures will be used to evaluate all activities. Anyone entering the project-controlled areas must be protected against potential safety and exposure hazards. This section provides guidance for using PPE to be worn for project activities and contingencies for upgrading or downgrading PPE. These PPE requirements for specific project tasks may be further defined or supplemented in applicable company policies and procedures, work packages, SWP, or RWP.

The purpose of PPE is to shield or isolate personnel from radiological, nonradiological, physical, and biological hazards that cannot be eliminated through engineering or other controls. It is important to realize that no single PPE ensemble can protect against all hazards and under all conditions. Proper work practices and adequate training that will serve to augment PPE to provide the greatest level of protection to workers include the following:

- Selecting, issuing, using, and maintaining PPE in accordance with applicable company policies and procedures. Selection of the proper PPE to protect facility personnel is based on the following: pipe cutting, heavy equipment operation, decontamination.
- Understanding potential contaminant routes of entry.
- Discussing physical form and chemical characteristics of chemicals or waste contaminants.
- Understanding acute and chronic effects from exposure to chemicals or waste contaminants.
- Communicating local and systemic toxicity of chemicals or waste contaminants.
- Discussing potential exposure levels (surface and airborne).
- Reading and understanding the hazard analysis evaluation (i.e., Section 2) of this HASP.

If radiological contamination is encountered at levels requiring use of anticontamination clothing, a task-specific RWP will be developed, and applicable company policies and procedures will be followed.

Personal protective equipment is generally divided into two broad categories: (1) respiratory protective equipment and (2) personal protective clothing. Table 5-1 provides guidance in the selection process for respiratory and protective clothing. Project activities will be continually evaluated during the course of the project to determine the most appropriate PPE levels and any modifications required. Potential exposures and hazards associated with project tasks will be monitored (as discussed in Section 3) during the course of the project to evaluate changing conditions and to determine PPE level adequacy and modifications.

5.1 Respiratory Protection

In controlling occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective will be to prevent atmospheric contamination. This will be accomplished as far as feasible by accepted engineering control measures (e.g., enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators will be selected and used. The level and type of respiratory protection for VES-SFE-20 Project activities are task-specific and relate directly to the airborne hazard for each given Phase I and II task or activity.

Table 5-1. Respiratory and protective clothing selection guidance.

Hazard	Level of Protection
Respiratory Personal Protective Equipment Selection^a	
Not IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate or aerosol chemicals and radionuclides.	Level C—full-facepiece, as determined by IH/RadCon Level B—full-facepiece supplied air respirator with an air-purifying escape cartridge or airhood (bubblehood) HEPA/chemical combination cartridge for concentrations up to the protection factor of an air-purifying full-facepiece respirator and within the assigned derived air concentration ^b value
IDLH or oxygen-deficient atmospheric conditions, gaseous, vapor, particulate, or aerosol chemicals or radionuclides.	Level B—full-facepiece, supplied air respirator with an escape-only SCBA ^c or Level A—SCBA
Protective Clothing Selection	
Low atmospheric contaminant levels that are present under stable conditions. No anticipated immersion, splashes, or potential for unexpected contact with radiological or nonradiological contaminants.	Level D
Moderate atmospheric contaminants under relatively stable conditions; liquid splashes or other direct contact that do not have corrosive characteristics or can be absorbed by exposed skin. Low radionuclide contamination and airborne radioactivity levels. ^d	Level C
Moderate to high atmospheric contaminants under unstable conditions; potential for contact with wet, contaminated surfaces or material that can saturate or permeate Level C protective clothing. Moderate radionuclide contamination and airborne radioactivity levels. ^d	Level B (As a contingency only)
High and unknown atmospheric contaminants; potential for contact with substances that pose a high hazard potential to the skin; high potential for splash, immersion, or exposure to unexpected vapors, gases, aerosols, or dusts that may present an IDLH situation or readily absorbed through the skin. High radionuclide contamination and airborne radioactivity levels. ^d	Level A (Will not be worn)
<p>a. A HEPA or multichemical and HEPA combination cartridge may be selected by IH and RadCon personnel based on specific hazards.</p> <p>b. Derived air concentration based on specific radionuclides.</p> <p>c. Contamination levels and airborne radioactivity as defined by 10 CFR 835.603(d).</p> <p>d. Level A PPE is not anticipated to be required for personnel conducting project operations.</p>	
HEPA = high-efficiency particulate air IH = industrial hygienist RadCon = Radiological Control	IDLH = immediately dangerous to life or health PPE = personal protective equipment SCBA = self-contained breathing apparatus

All personnel required to wear respirators shall complete training and be fit-tested before being assigned a respirator. Requirements for respirator use, emergency use, storage, cleaning, and maintenance, as stated in the applicable company policies and procedures shall be followed. Assigned protection factors for respiratory devices are listed applicable company policies and procedures.

5.2 Personal Protective Equipment Levels

The following sections provide general guidance on typical HAZWOPER levels of PPE. Project activities will be evaluated to determine the most appropriate PPE, which may or may not incorporate traditional HAZWOPER levels. When required to be worn, PPE requirements will be specified on applicable JSAs. Table 5-2 lists the anticipated PPE levels for project activities. These levels will be changed or modified by the project HSO as appropriate based on site-specific conditions in consultation with the project IH and RadCon personnel. Such modifications are routinely employed to maximize efficiency and to meet operational-specific needs without compromising personnel safety and health. Table 5-3 lists PPE items typically included for the two anticipated levels (Level D and C) of PPE to be worn at the project site and contingency for (Level B).

5.2.1 Level D Personal Protective Equipment

Level D PPE will only be selected for protective clothing and not for project activities with respiratory or skin absorption hazards requiring whole-body protection. Level D PPE provides no protection against airborne chemical hazards, but rather is used for protection against surface contamination and physical hazards. Level D PPE will only be allowed in areas that have been characterized as having limited contamination hazards.

5.2.2 Level C Personal Protective Equipment

Level C PPE will be worn when the task site chemical or radiological contaminants have been well-characterized indicating that personnel are protected from airborne exposures by wearing an air-purifying respirator with the appropriate cartridges, no oxygen-deficient environments exist (less than 19.5% at sea level), and that there are no conditions that pose IDLH.

5.2.3 Level B Personal Protective Equipment

Level B PPE is listed as a contingency only and will be worn when personnel cannot be adequately protected with an air-purifying respirator because high levels of contaminants are present, the appropriate respirator cartridge or combination is not available, a significant hazard exists for skin exposure, or IDLH or oxygen-deficient conditions exist. If IDLH conditions do not exist, then an escape air-purifying cartridge may be substituted for the escape bottle.

NOTE: *Personnel must inspect all PPE before donning and entry into any work area. Items found to be defective or that become unserviceable during use will be doffed and disposed of in accordance with posted procedures and placed into the appropriate waste stream. The PPE inspection guidance is provided in Table 5-3.*

5.2.4 Level A Personal Protective Equipment

Level A PPE is not anticipated for VES-SFE-20 Project activities.

Table 5-2. Project activities and associated personal protective equipment levels.

Task	Initial Level of Personal Protective Equipment	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	Personal Protective Equipment Modifications and Comments
Mobilization, demobilization, and site reclamation	D	D+/C	N/A	Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH based on airborne contaminant. Gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable. Leather gloves for all material-handling tasks. Hearing protection as required by IH.
Decontamination	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on type of decontamination and contaminants. Downgrade only for staging and removal of material to be decontaminated contingent upon no surface contamination or use of confining barrier material.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Gloves and other protective clothing materials defined by IH and RWP as applicable. Hearing protection as required by IH.
Phase I Tasks					
Rerouting of existing utilities	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on type of decontamination and contaminants. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Gloves and other protective clothing materials defined by IH and RWP as applicable. Additional eye protection and hearing protection as required by IH.
Excavation, sloping, and soil disposal	D	D+/C	N/A	Upgrade based on contaminants encountered in soils. Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable.

Table 5-2. (continued).

Task	Initial Level of Personal Protective Equipment	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	Personal Protective Equipment Modifications and Comments
Removal of tank and contents	D+/C	C/C+	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on nature of the tasks and contaminants encountered. Downgrade only for preliminary staging of materials and tools and following removal and isolation of contaminants in appropriate waste containers.	Level C respiratory protection defined by IH and RWP based on airborne contaminants and tasks. All asbestos work in accordance with 29 CFR 1910.1001 or .1101 (as applicable). Hearing protection as required, gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable.
Disposal of tank and contents	D/D+	D+/C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only when handling containerized waste with no surface contamination or associated nonradiological airborne or surface hazards.	Level C respiratory protection defined by IH and RWP based on airborne contaminants and tasks. All asbestos work in accordance with 29 CFR 1910.1001 or .1101 (as applicable). Hearing protection as required, gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable.
Vault closure and site grading	D	D+/C	N/A	Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH based on airborne contaminant. Hearing protection as required, gloves and other protective clothing materials defined by IH based on specific tasks and RWP as applicable. Leather gloves for all material-handling tasks.
Phase II Tasks					
Cutting and capping of existing lines	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material-handling tasks.

Table 5-2. (continued).

Task	Initial Level of Personal Protective Equipment	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	Personal Protective Equipment Modifications and Comments
Excavation and shoring	D	D+/C	N/A	Upgrade based on contaminants encountered in soils. Upgrade to Level C if airborne concentrations exceed action limits.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Fall protection as required.
Building removal	D+	C	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material-handling tasks. Fall protection as required.
Underground structure removal	D+/C	C/C+	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material-handling tasks. Fall protection as required.
Contaminated soil removal	D+/C	C/C+	D	Upgrade to Level C if airborne concentrations exceed action limits. Also, additional protective clothing requirements may be required based on surface contamination encountered. Downgrade only for staging and removal of materials and lines with no contamination.	Level C respiratory protection defined by IH and RWP based on airborne contaminants. Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable. Leather gloves for all material-handling tasks. Fall protection as required.

Table 5-2. (continued).

Task	Initial Level of Personal Protective Equipment	Upgrade Contingency	Downgrade Contingency	Upgrade or Downgrade Criteria	Personal Protective Equipment Modifications and Comments
Disposal of process equipment, structures, and contaminated soil	D	D+	N/A	Upgrade only if contaminants encountered in surface of waste containers. If encountered decontamination to be conducted.	Hearing protection as required, gloves and other protective clothing materials defined by IH and RWP as applicable.
IH = industrial hygienist RWP = radiological work permit					

Table 5-3. Levels and options of personal protective equipment.

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
D	<p>Coveralls or standard work clothes (coverall material type based on industrial hygiene determination)</p> <p>Hard hat (unless working indoors with no overhead or falling debris hazards) meeting ANSI Z89.1 requirements</p> <p>Eye protection (safety glasses meeting ANSI Z87.1 requirements as a minimum)</p> <p>Hand protection (material based on type of work and hazardous materials being handled)</p> <p>Safety footwear (steel or protective toe and shank) meeting ANSI Z41 requirements or sturdy leather above the ankle for construction tasks</p> <p>Highly visible vests for ground personnel exposed to heavy equipment traffic</p>	<p>Chemical or radiological protective clothing (Tyvek or Saranex) as determined by IH or RCT</p> <p>Chemically resistant hand and foot protection (e.g., inner and outer gloves and boot liners)</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP)</p> <p>Any specialized protective equipment (e.g., hearing protection, cryogenic gloves, face shields, welding goggles, and aprons).</p>
C	<p>Level D ensemble with the following respiratory and whole-body protection upgrades:^b</p> <ul style="list-style-type: none"> Full-facepiece air purifying respirator equipped with a NIOSH-approved HEPA filter or chemical combination cartridge (IH to specify cartridge type) <p>OR</p> <ul style="list-style-type: none"> An air hood operating at a minimum pressure of 6 cfm or a full-facepiece supplied air respirator with a 10-minute escape bottle, a SCBA or an escape air-purifying combination HEPA or chemical cartridge (supplied air respirator hose length no more than manufacturer's specification and under no circumstances greater than 91 m [300 ft]) Standard Tyvek (or equivalent) coverall <p>OR</p> <ul style="list-style-type: none"> Chemical-resistant coveralls (e.g., Tyvek QC, Tychem 7500, or Saranex-23-P) (IH to specify material) 	<p>Chemical-resistant outer shoe or boot cover (IH or RCT to specify material)</p> <p>Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP)</p> <p>Outer chemical-resistant gloves (as determined by the IH)</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP)</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons)</p> <p>(Safety glasses not required if wearing a full-face respirator)</p>

Table 5-3. (continued).

Personal Protective Equipment Level	Personal Protective Equipment Required ^a	Optional Personal Protective Equipment or Modifications
B	<p>Contingency only for VES-SFE-20 Project.</p> <p>Level C ensemble with the following respiratory and whole body protection upgrades:^{b,c}</p> <ul style="list-style-type: none"> • Chemical-resistant coveralls or encapsulating suit (Tyvek QC, Tychem 7500, Saranex 23-C, or equivalent) • Any other chemical or radiological PPE prescribed in site-specific RWP or safe work permit • Chemical-resistant butyl or one-time-use natural latex outer boots (as determined by the IH and RWP) • Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP) • Outer chemical-resistant Viton or polyvinyl alcohol gloves (as determined by the IH). <p>NOTE: <i>All seams must be taped and secured to prevent skin contact from hazardous substances in a soil, liquid, mist, and aerosolized form.</i></p>	<p>Chemical-resistant outer shoe or boot cover (IH or RCT to specify material)</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP)</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons)</p> <p>(Safety glasses not required if wearing a full-face respirator)</p>
A	<ul style="list-style-type: none"> • Not anticipated for VES-SFE-20 Project activities. 	Not anticipated for VES-SFE-20 Project activities

a. The PPE ensemble may be modified by the IH and/or RCT to provide protection from skin or other physical hazards.

b. Upgrades are determined by the IH in conjunction with other environment, safety, and health professionals.

c. Level B and A work will require approval from the program safety, health, and quality assurance manager and coordination with the INEEL fire department.

ANSI = American National Standards Institute
 HEPA = high-efficiency particulate air
 IH = industrial hygienist
 INEEL = Idaho National Engineering and Environmental Laboratory
 NIOSH = National Institute of Occupational Safety and Health
 RCT = radiological control technician
 RWP = radiological work permit
 SCBA = self-contained breathing apparatus

5.3 Personal Protective Clothing Upgrading and Downgrading

The HSO, in consultation with the assigned IH and RadCon personnel, will be responsible for determining when to upgrade or downgrade PPE requirements. Upgrading or downgrading of PPE based on changing operational conditions (e.g., equipment, waste types, location of tasks) is a normal occurrence. If changing conditions are encountered, work control documents (e.g., work order, RWP, JSA) may need to be updated to reflect these changes or to be augmented by an SWP. Additional reasons for upgrading or downgrading are listed in the following subsections.

5.3.1 Upgrading Criteria for Personal Protective Equipment

The level of PPE required will be upgraded for the following reasons and work will halt until PPE upgrading has been completed:

- Identification of new, unstable, or unpredictable site hazards
- Temporary loss or failure of any engineering controls
- Contaminants that present difficulty in monitoring or detecting
- Known or suspected presence of skin absorption hazards
- Identified source or potential source of respiratory hazard(s) not anticipated
- Change in the task procedure that may result in an increased contact with contaminants or meeting any of the criteria listed above.

5.3.2 Downgrading Criteria

The level of PPE will be downgraded under the following conditions:

- Elimination of hazard or completion of task(s) requiring specific PPE
- Implementation of new engineering or administrative controls that eliminate or significantly mitigate hazard
- Sampling information or monitoring data that show the contaminant levels to be stable and lower than established action limits
- Elimination of potential skin absorption or contact hazards.

5.4 Inspection of Personal Protective Equipment

All PPE ensemble components must be inspected before use and when in use during project activities in accordance with applicable company policies and procedures. Once PPE is donned, self-inspection will serve as the principal form of inspection. If PPE should become damaged or degradation or permeation is suspected, the individual wearing the PPE will inform others of the problem and proceed directly to the work zone exit point to doff and replace the unserviceable PPE. In addition, all PPE that becomes grossly contaminated or presents a potential source for the spread of such contamination will be required to be decontaminated or replaced.

Table 5-4 provides an inspection checklist for common PPE items. Not all PPE ensemble items may be required for project tasks; however, this information is provided as a contingency. Where specialized protective clothing or respiratory protection is used or required, the manufacturer inspection requirements (in conjunction with regulatory or industry inspection practices) will be followed. Consult the assigned IH, safety professional, and RadCon about specific PPE inspection criteria.

Table 5-4. Inspection checklist for personal protective equipment.

Personal Protective Equipment Item	Inspection
Respirators (full-facepiece air-purifying and supplied-air respirators with escape-only SCBA bottles or escape cartridges)	<p>Before use:</p> <p>Verify that respirator is within 3 years of shelf life.</p> <p>Ensure airline matches the airline respirator to be used (black hose).</p> <p>Inspect airline hose connections (sections of hose) to ensure all are threaded or permanent metal-to-metal connections (no quick disconnect pieces).</p> <p>Check condition of the facepiece, head straps, valves, connecting lines, fittings, and all connections for tightness.</p> <p>Check cartridge to ensure proper type or combination are being used for atmospheric hazards to be encountered, and inspect threads and O-rings for pliability, deterioration, and distortion.</p> <p>Check for proper setting and operation of regulators and valves, check all hose connections back to the breathing-air compressor, check the pressure to the airline station and on individual airline connections to ensure pressure is within required range (in accordance with the manufacturer's specifications).</p> <p>Before entry into Level B area:</p> <p>Ensure air compressor is providing a minimum of 110 psi when all personnel have airlines hooked up to the compressor manifold.</p>
Air hoods	<p>Before use:</p> <p>Ensure airline matches the air hood to be used (red hose)</p> <p>Visually inspect all seams and surfaces for tears and cracks</p> <p>Pressurize air hood to check for pinholes or defective seams (no air should leak out when choking clear hood-piece).</p> <p>Before entry into contaminated area:</p> <p>Inspect all airline connections for tight fit (pull connections three times)</p> <p>Ensure air compressor is providing a minimum of 110 psi when all personnel have airlines connected to the compressor manifold.</p>

Table 5-4. (continued).

Personal Protective Equipment Item	Inspection
Level D, C, and B clothing	<p>Before use:</p> <p>Visually inspect for imperfect seams, nonuniform coatings, and tears</p> <p>Hold PPE up to the light and inspect for pinholes, deterioration, stiffness, and cracks.</p> <p>While wearing in the work zone:</p> <p>Inspect for evidence of chemical attack such as discoloration, swelling, softening, and material degradation</p> <p>Inspect for tears, punctures, and zipper or seam damage</p> <p>Check all taped areas to ensure they are still intact.</p>
Gloves	<p>Before use:</p> <p>Pressurize rubber gloves to check for pinholes: blow in the glove, then roll until air is trapped and inspect. No air should escape.</p> <p>Inspect seams of leather gloves and glove surface for tears and splits and verify no permeation has taken place.</p>
<p>PPE = personal protective equipment</p> <p>SCBA = self-contained breathing apparatus</p>	

6. PERSONNEL TRAINING

All INEEL personnel will receive training, as specified in the applicable section of the 29 CFR 1910.120; the HAZWOPER standard; DOE, federal, and state manuals; INTEC manuals; and INEEL companywide manuals as applicable. Training will be developed, conducted, and maintained in accordance with applicable company manuals and applicable INTEC supplemental training procedures (where required). Applicable company manuals describe the companywide processes that ensure the INEEL work force is properly trained to work effectively and safely and ensure that all personnel in the company understand their roles, management's role, and the role of the Training Directorate in training INEEL employees.

Assigned project personnel will receive training, as specified in 29 CFR 1910.120 or 29 CFR 1926.65 and INEEL companywide manuals, as applicable. Table 6-1 summarizes the project-specific training requirements.

Modifications (e.g., additions to or elimination of) to training requirements listed in Table 6-1 may be necessary based on changing field conditions. Any changes to the requirements listed in Table 6-1 must be approved by the HSO, with concurrence from the FTL or STR, project manager, RCT, and IH, as applicable. These changes should be based on site-specific conditions and should be considered a minor change to the HASP, as defined by instructions from applicable company forms because they are administrative in nature and do not change the intent of the document.

6.1 General Training

All project personnel are responsible for meeting training requirements including applicable refresher training. Evidence of training will be maintained at the project site, field administrative location, or electronically (e.g., Training Records and Information Network [TRAIN] [INEEL 2001]). Nonfield team personnel and visitors must be able to provide evidence of meeting required training for the area of the site they wish to access before being allowed into a project area. **As a minimum**, all personnel who access project support locations must have received a site-specific orientation briefing, are required to wear PPE, and must provide objective evidence of having completed INEEL computer-based PPE training (00TRN288, "Personal Protective Equipment") or equivalent, in accordance with 29 CFR 1910.132, "General Requirements."

6.2 Project-Specific Training

Before beginning work at the project site, field team members will receive project-specific HASP training that will be conducted by the HSO (or designee). This training will consist of a complete review of (1) a controlled copy of the project HASP, attachments, and document action requests, (2) applicable JSAs and SWPs (if required), (3) work orders, and (4) other applicable work control and work authorization documents, with time for discussion and questions. Project-specific training can be conducted in conjunction with, or separately from, the required formal prejob briefing.

At the time of project-specific HASP training, personnel training records will be checked and verified to be current and complete for all the training requirements shown in Table 6-1. After the HSO (or designee) has completed the site-specific training, personnel will sign applicable company forms or equivalent, indicating that they have received this training, understand the project tasks, associated hazards and mitigations, and agree to follow all HASP and other applicable work control and safety requirements. Training forms are available on the INEEL Intranet under "Forms."

Table 6-1. Minimum required training for access to project areas.

Personnel and Operational Areas to be Accessed ^a	Field Team Leader; ^a Subcontractor Technical Representative; ^b Assigned Project Environment, Safety, and Health; and RadCon Personnel	Project Support Zone or Areas ^c	General Controlled Access Areas (e.g., contamination reduction zone or EZ)	Access to Radiological Contamination or Potentially Contaminated Areas and Operations with Potential Significant Safety or Health Hazards
Required Training				
40-hour HAZWOPER ^d - operations	Yes		e	Yes
24-hour HAZWOPER ^d - operations			e	
Project operations HASP training ^f	Yes		Yes	Yes
Project-site orientation briefing ^g		Yes		
RW I or II ^h	RW II	Escort or RW I	Escort or RW II	RW II
Respiratory protection	Yes ⁱ		i	i

NOTE: Shaded fields indicate specific training is not required or applicable.

a. Unless specific positions are listed, minimum access requirements apply to all other project personnel and visitors.

b. The FTL and STR will be trained to the HAZWOPER supervisor level.

c. Project operational support areas located within the INTEC operations area may require additional training requirements such as INEEL access (Blue Card) or INTEC access. Contact the project FTL for additional training requirements.

d. Includes 8-hour HAZWOPER refresher training, as applicable, and supervised field experience as follows:

40-hour HAZWOPER = 24-hour supervised field experience and 24-hour HAZWOPER = 8-hour supervised field experience.

e. 40-hour or 24-hour HAZWOPER training requirement will be determined by the assigned IH or safety professional based on the nature of the operational tasks and potential for exposure to contaminants or significant safety hazards.

f. Includes project-specific hazards communications (29 CFR 1910.1200) site-access and security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e), "Training."

g. Orientation includes briefing of site hazards, designated work areas, emergency response actions, and PPE requirements. Personnel receiving project-site orientation briefing only are limited to the areas outside designated work areas and must be escorted by a project supervisor or designee who is fully trained on the requirements of the HASP.

h. Training requirements and allowances for escort into radiologically controlled areas are provided in applicable company policies and procedures.

i. If action levels are exceeded or as required by the RWP or JSA.

FTL = field team leader

HAZWOPER = hazardous waste operations

INEEL = Idaho National Engineering and Environmental Laboratory

JSA = job safety analysis

RadCon = Radiological Control

RWP = radiological work permit

HASP = health and safety plan

IH = industrial hygienist

INTEC = Idaho Nuclear Technology Engineering Center

PPE = personal protective equipment

RW = radiological worker

STR = subcontractor technical representative

A trained HAZWOPER 8-hour supervisor (FTL or other person who has been trained by the HAZWOPER supervisor) will monitor the performance of each newly 24- or 40-hour trained worker to meet the 1 or 3 days of supervised field experience, respectively, in accordance with 29 CFR 1910.120(e). Following the supervised field experience period, the supervisor will complete applicable company forms to document the supervised field experience. Table 6-2 outlines personnel training requirements at CERCLA sites.

NOTE 1: *Supervised field experience is only required if personnel have not previously completed this training at another CERCLA site (documented), or they are upgrading from 24- to 40-hour HAZWOPER training. A copy of the training record must be kept at the project site as evidence of training or be available electronically.*

NOTE 2: *Completed project training forms should be submitted to the program training coordinator for inclusion in the TRAIN system within 5 working days of completion.*

6.3 Prejob and Postjob Briefings and Safety Meetings

All VES-SFE-20 Project activities performed in accordance with companywide requirement documents will require a prejob briefing conducted by a supervisor. During this briefing, tasks associated with project activities will be outlined, hazards identified, hazard controls and mitigation reviewed, PPE requirements discussed, waste minimization opportunities communicated, and employees' questions answered. Following the completion of operational activities, a postjob briefing will be conducted with particular emphasis of capturing lessons learned and process improvement for future operations.

Other safety meetings on various subjects will be conducted periodically for operations personnel to reinforce specific safety topics. An FTL or STR, assigned safety and health operations personnel, or worker may conduct safety meeting. Attendance at the safety meetings will be documented on an applicable form and submitted to training personnel for entry into the TRAIN system.

Table 6-2. Required project-specific training.

Required Training	Field Team Leader, Health and Safety Officer, and Samplers	Other Field Team Members	Access into the Designated or Controlled Work Area, Construction Area or Contamination Reduction Zone	Access to Project Areas Outside Designated or Controlled Work Area, Construction Area or Support Zone
40-hour HAZWOPER ^a - operations	Yes	Yes		
24-hour HAZWOPER ^b - operations			Yes	
HAZWOPER supervisor	Yes ^c			
Project-specific HASP training ^d	Yes	Yes	Yes	
Project-site orientation briefing ^e				Yes
Fire extinguisher training (or equivalent)	c	c		
CPR, medic first aid	c	c		
Use of PPE (00TRN288)	Yes	Yes	Yes	
Hearing conservation	f	f	f	
Hantavirus (SMTT0008)	Yes ^c	Yes		
Heat stress training (00TRN606)	Yes	Yes		
Working in hazardous temperatures - cold stress (SMTT0010)	Yes	Yes		
Job safety analysis training	Yes	Yes	Yes	
Asbestos awareness computer-based training (00TRN152)	Yes	Yes	Yes ^g	
Confined space entrant, attendant, and job entry supervisor (00TRN183)	Yes ^c	Yes ^g	g	
Respirator training (contingency only)	h	h	h	
Prejob briefings and postjob reviews (00TRN732)	Yes	Yes	Yes	
Prejob briefing performance evaluation (00TRN754)	c			
DOE RW I and II	g	g	g	

Table 6-2. (continued).

Required Training	Field Team Leader, Health and Safety Officer, and Samplers	Other Field Team Members	Access into the Designated or Controlled Work Area, Construction Area or Contamination Reduction Zone	Access to Project Areas Outside Designated or Controlled Work Area, Construction Area or Support Zone
<p>NOTE: <i>Shaded fields indicate specific training is not required or applicable.</i></p> <p>a. Includes 8-hour HAZWOPER refresher training as applicable, and supervised field experience as follows: 40-hour HAZWOPER = 24-hour supervised field experience and 24-hour HAZWOPER = 8-hour supervised field experience.</p> <p>b. 40-hour or 24-hour HAZWOPER training requirement will be determined by the HSO based on the nature of the project tasks and potential for exposure to contaminants or safety hazards.</p> <p>c. At least one trained person onsite when field team is working and the health and safety officer will determine appropriate number of personnel requiring training.</p> <p>d. Includes project-specific hazards communications (29 CFR 1910.120), site-access and security, decontamination and emergency response actions, as required by 29 CFR 1910.120(e).</p> <p>e. Orientation includes briefing of site hazards, designated work areas, emergency response actions, and PPE requirements. Personnel receiving project-site orientation briefing only are limited to the areas outside designated work areas and must be escorted by a project supervisor or designee who is fully trained on the requirements of the HASP.</p> <p>f. Only if entering areas where initial exposure determination indicates exposure above the action limit is possible.</p> <p>g. As required, based on project duties and/or site zone access requirements.</p> <p>h. Only required if entering area requiring respiratory protection (e.g., action levels exceeded or the IH sampling shows respirators required).</p> <p>CPR = cardiopulmonary resuscitation DOE = U.S. Department of Energy HASP = health and safety plan HAZWOPER = hazardous waste operations HSO = health and safety officer IH = industrial hygienist PPE = personal protective equipment RW = radiological worker</p>				

7. SITE CONTROL AND SECURITY

Site control and security will be maintained at the project site during all activities to prevent unauthorized personnel from entering the work area. Entry into and exit out of these areas will be controlled through the appropriate use of barriers, signs, and other measures in accordance with applicable company policies and procedures.

The HSO and safety professional will be consulted about equipment layout at the project site (in conjunction with the STR for subcontractor-owned equipment) to minimize personnel hazards from equipment. The focus for site layout should be on equipment with stored energy (e.g., electrical, pressurized systems, elevated materials or equipment, and chemical), moving and rotating parts, and other equipment with the potential to result in personnel injuries from being struck-by, caught-between, or entangled in such equipment. The layout at the project site should reflect the nature of the chemical and radiological hazards present and should mitigate through the use of engineering controls (e.g., barriers, guards, and isolation), administrative controls (e.g., roped off restricted areas or controlled entry access).

Good housekeeping will be maintained at all times during the project to include (1) maintaining working and walking surfaces to minimize tripping hazards, (2) stacking or storing in a centralized location materials and equipment when not in use, and (3) regular cleanup of debris and trash that may accumulate at the project site.

Based on the nature of the project tasks to be completed during the Phase I and II activities, the site controls will change during the course of the project to reflect the changing hazards associated with the type of work being conducted within the controlled work areas (e.g., physical, chemical or radiological). A graded approach with types of site control designations will be used based on these hazards, type of equipment in the controlled areas, duration of project tasks, and HAZWOPER regulatory or radiological requirements. The types of site controlled areas anticipated during the course of Phase I and II activities include but are not limited to the following:

- Low hazard—nonintrusive or minimal intrusive activities (e.g., staking area during surveying tasks) where there is no potential for encountering radiological or chemical hazards. See Figure 7-1 for example configuration.
 - Support area or zone—does not have to be formally delineated but must be clearly separate from the construction area or controlled work area (CWA).
 - Construction area or CWA—limits access to trained personnel only.
- Moderate to high hazard—known or likely to encounter site radiological and chemical hazards or other hazardous activities or operations. See Figure 7-2 for example configuration.
 - Support area or zone—does not have to be formally delineated but must be clearly separate from the other controlled areas.
- Contamination reduction zone (CRZ) with a contamination reduction corridor (CRC) and decontamination area.

NOTE: *The CRC and decontamination area do not have to be formally delineated but must be communicated to personnel entering the CRZ.*

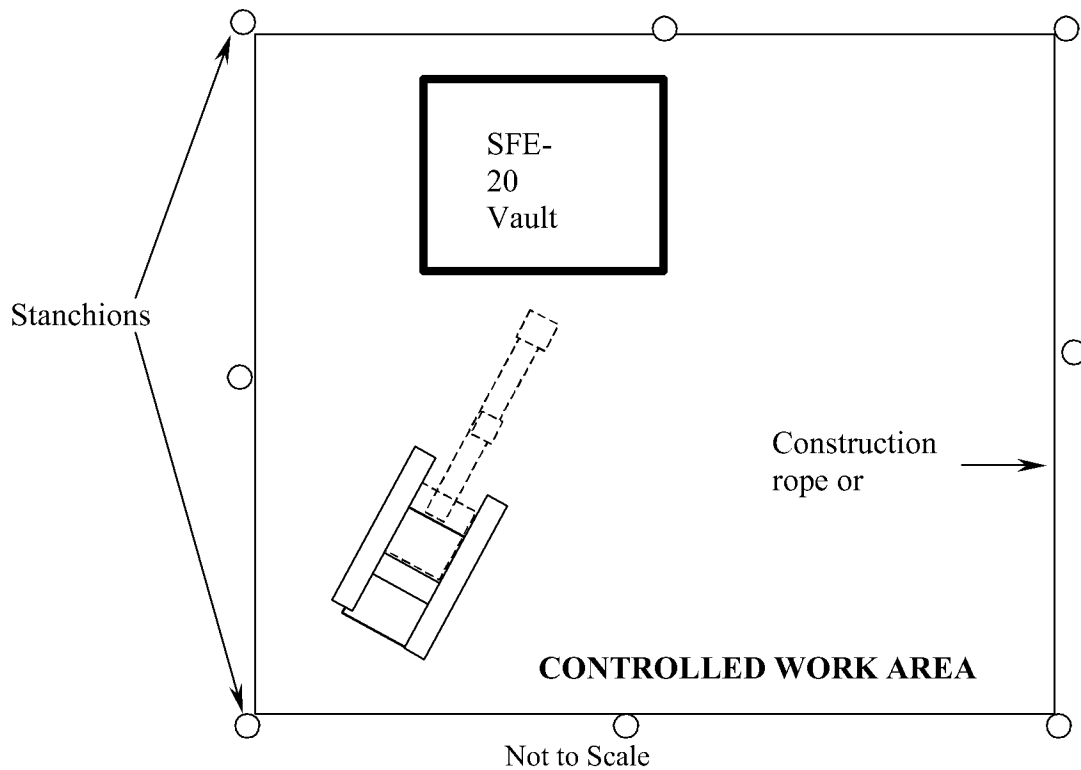


Figure 7-1. Example of low hazard or construction controlled work area.

- Exclusion zone (EZ)—large enough to encompass hazardous activities, equipment, and operations.
- Additional controlled areas—within the EZ or CWA (e.g., radiological control areas and asbestos abatement area) may be established based on the hazards.

The primary differences between work areas will be the size of the area, method of delineation, and postings as determined by the activity being conducted and associated hazards. The determination of what type of work area will be established will be made by the HSO in conjunction with the FTL or STR and RadCon personnel (where radiological concerns exist).

Both radiological and nonradiological hazards (including industrial safety hazards) will be evaluated when establishing the initial work zone size, configuration, and location. Common barriers may be used to delineate both radiological and nonradiological work-zone postings, depending on the nature and extent of contamination. If common barriers are used, they will be delineated and posted in accordance with all applicable requirements (29 CFR 1910.120 and 10 CFR 835), using appropriate colored rope and postings.

The INTEC is fenced and controlled to prevent unauthorized entry into operations areas. Entry into and exit out of the construction area or CWA will be controlled through the appropriate use of barriers, signs, and other measures in accordance with applicable company policies and procedures. RadCon personnel in accordance with the applicable company policies and procedures will establish radiological control area.

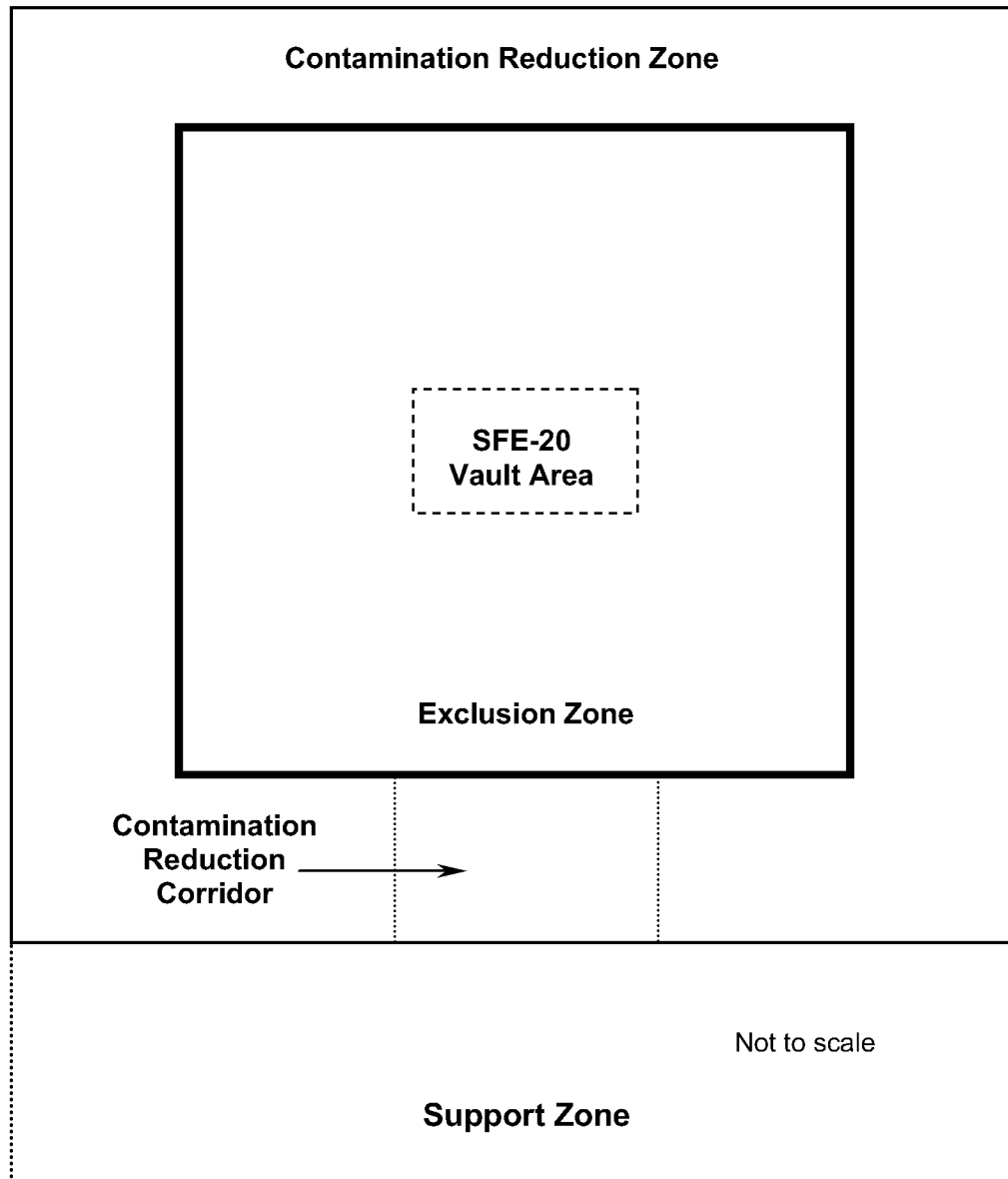


Figure 7-2. Example of moderate to high hazard work zones.

Personnel not directly involved with project activities will be excluded from entering these work areas. Visitors may be admitted into work areas provided they are (1) on official business, (2) received a site-specific orientation or HASP training, (3) have met all the site-specific training requirements for the area they request to access as listed on Table 6-1, and (4) wear appropriate PPE.

NOTE: *Visitors may not be allowed into VES-SFE-20 Project controlled work areas during high hazard tasks to minimize risks to workers and visitors. The decision to allow a visitor access into a controlled work area will be made by the FTL or STR in consultation with the HSO and RadCon personnel.*

7.1 Support Area or Zone

The support area or zone will be considered a clean (i.e., nonradiological) area. The location of the support zone should be in a prevailing upwind direction from the EZ (where possible) and readily accessible from the nearest road. The support zone is a designated area or building outside the CRZ and does not have to be delineated. Support trailers, vehicle parking, additional emergency equipment, extra PPE, and stored monitoring and sampling equipment may be located in the support zone. Visitors lacking appropriate training to enter other project areas will be restricted to this zone.

The subcontractors equipment laydown and storage area for the project will generally be located in the support zone if another designated area outside INTEC has not been established.

7.2 Construction Area or Controlled Work Area

The construction area or CWA will be large enough to encompass the equipment and nature of the project tasks being conducted to prevent personnel not assigned to the project and visitors from being exposed to potential safety and health hazards associated with the project construction or other hazardous equipment operations tasks. The boundary of the construction area or CWA typically will be marked with a combination of stanchions or posts and delineated with rope or ribbon and include warning signs (e.g., construction area) or other demarcation. Only the minimum number of personnel required to safely perform the project tasks will be allowed into this area. The CWA will be controlled at all times. Also, entry and exit points will be established to regulate the flow of personnel and equipment. All personnel who enter the construction area or CWA will wear the appropriate level of PPE for the hazards present (see Section 5).

Factors that will be considered when establishing the construction area or CWA boundary include (1) air monitoring data, (2) equipment in use, and (3) the physical area necessary to conduct site operations. Based on the factors listed above, the boundary may be expanded or contracted as new information becomes available. The HSO, in conjunction with the safety professional and IH, will establish the boundary. All CWAs will be delineated and posted with the appropriate signage based on the hazard being controlled and in accordance with applicable company policies and procedures.

NOTE: *The safety professional and IH will assist the HSO in establishing access requirements for the truck or heavy equipment traffic routes, designated work areas, and for the project-based equipment in use.*

7.3 Contamination Reduction Zone and Corridor

The CRZ and CRC are transition areas surrounding the EZ and are located between the EZ and support zone (see Figure 7-2). The CRC may not be formally delineated, but will be designated by the travel path from the established CRZ-controlled entry and exit point and the EZ entry and exit point. The CRZ and CRC will serve to buffer the support zone from potentially contaminated EZ areas. The CRZ and CRC may serve as staging areas for equipment and temporary rest areas for personnel.

7.4 Exclusion Zone

The EZ is the area within the project site where exposure to the physical, chemical, and radiological hazards is anticipated, and access to this area is controlled to minimize personnel exposure to these hazards. The EZ will be large enough to encompass the primary task area and to allow equipment and personnel to move about freely and conduct necessary project tasks. Only the minimum number of

personnel required to safely perform project tasks will be allowed into the EZ. The EZ will be formally delineated and configured in such a manner as to restrict personnel without proper training and PPE from entering (e.g., established entry and exit points). The EZ shape and size will be based on the tasks being conducted, existing structures and facilities, and potential for impact to adjacent areas from project tasks or contaminants.

The EZ is a controlled access zone at all times. An entry and exit point will be established at the periphery of the EZ and CRC to regulate the flow of personnel and equipment. The EZ boundary will be delineated with rope or printed hazard ribbon and posted with signs in accordance with applicable company policies and procedures.

Factors that will be considered when establishing the EZ boundary include (1) tasks being conducted, (2) air monitoring data, (3) radiological contamination data, (4) radiation fields, (5) equipment in use, (6) physical area necessary to conduct site operations, and (7) potential for contaminants to be blown from the area. The boundary may be expanded or contracted as these factors change or additional monitoring information becomes available. All personnel who enter the EZ will wear the appropriate level of PPE for the hazards present and have required training as listed in Sections 5 and 6, respectively.

7.5 Release of Radiologically Contaminated Material

Project equipment or materials taken into or removed from radiologically controlled areas will not be released until required radiological surveys have been completed (e.g., hand-held instruments and swipes) in accordance with applicable company policies and procedures as stated in the RWP, and as directed by RadCon personnel.

7.6 Site Security

The INTEC is secured and controlled with the existing fence and through appropriate posting to prevent entry into INTEC operational areas. The INEEL security forces will provide general INTEC security, and no additional site security beyond posting and delineating the project-controlled area (as described above) is required.

NOTE: *Signs are routinely lost because of high winds and will be replaced the next working day following discovery.*

7.7 Wash Facilities and Designated Eating Areas

Many project activities will involve close, if not direct, contact with contaminated surfaces or hazardous materials. Ingestion of hazardous substances is likely when workers do not practice good personal hygiene habits during and following activities in project contaminated areas. It is important to wash hands, face, and other exposed skin areas thoroughly after completion of work and before smoking, eating, drinking, or chewing gum or tobacco.

NOTE: *No smoking, chewing, eating, applying lip balm, or drinking is allowed within CERCLA-regulated areas and radiologically controlled areas.*

The designated eating areas for site personnel will be established by the project HSO and will include INTEC designated eating areas.

7.8 Smoking Area

Smoking will be permitted only in designated smoking areas. Personnel will comply with all INEEL smoking policies, including disposal of smoking materials in the proper receptacles. All applicable requirements related to smoking at the INEEL will be followed.

8. OCCUPATIONAL MEDICAL SURVEILLANCE

VES-SFE-20 Project personnel shall participate in the INEEL OMP, defined in applicable company policies and procedures, to implement the requirements of DOE Order 440.1A, “Worker Protection Management for DOE Federal and Contractor Employees”; DOE Guide 440.1-4, “Contractor Occupational Medical Program”; and 29 CFR 1910.120(f). The following medical surveillance examinations will be provided:

- Before assignment
- At least once every 12 months for each employee covered unless the attending physician believes a longer interval (not greater than biennially) is acceptable
- At termination of employment or reassignment to an area where the employee would not be covered, if the employee has not had an examination within the last 6 months
- At more frequent times, if the examining physician determines that an increased frequency of examination is medically necessary
- Personnel who are or may be exposed to hazardous substances at or above the OSHA permissible exposure limit (PEL), or published exposure limits, without regard to respirator use for 30 or more days per year
- All employees who are injured, become ill, or develop signs or symptoms because of possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation
- All employees who wear a respirator for 30 days or more a year or as required by “Respiratory Protection” (29 CFR 1910.134)
- As required by OSHA substance-specific standards when medical surveillance action levels are exceeded.

Personnel who wear a respirator in performance of their job, or who are required to take respirator training to perform their duties under this plan, must participate in the medical evaluation program for respirator use at least annually, as required by applicable company policies and procedures.

If the OMP does not have sufficient information to complete a medical evaluation before respirator training, the employee’s supervisor will be notified. The employee will not be permitted to fit test until the needed information is provided and any additional examination or testing is completed.

A single copy of the project HASP, JSAs, confined space entry requirements (as applicable), and other exposure-related information will be made available, upon request, to the INEEL OMP physician (and subcontractor physicians) conducting medical surveillance for employees participating in VES-SFE-20 Project activities. Exposure monitoring results and hazard information furnished to the OMP physician will be supplemented or updated annually (as stated in Section 12) as long as the employee is required to maintain a hazardous waste and material employee medical clearance. The OMP physician will then evaluate the physical ability of an employee to perform the work assigned.

The OMP physician shall evaluate the physical ability of project personnel to perform the work assigned, as identified in this HASP, based on job descriptions, and individual training plans. A

documented medical clearance (e.g., a physician's written opinion) will be provided to the employee and supervisor stating whether the employee has any detected medical condition that would place him or her at increased risk of health impairment from work hazardous waste operations, emergency response operations, respirator use areas, and work in confined space areas, as applicable. The OMP responsibilities, with regard to personnel assigned to the project, include, but are not limited to the following:

- Providing current comprehensive medical examinations (as determined by the examining physician) at an INEEL medical facility for full-time personnel
- Obtaining records and reports from an employee's private physicians, as required by the OMP director
- Performing a medical evaluation on return-to-work cases following an absence in excess of 1 work week (40 consecutive work hours) resulting from illness or injury
- Conducting a medical evaluation in the event that management questions the ability of an employee to work or if an employee questions his or her own ability to work.

Personnel are responsible for communicating any work or medical restrictions to their supervisor so that modified work assignments can be made if necessary. During the prejob briefing, the supervisor conducting the briefing should ask workers if they have any work restrictions. However, it is the employee's responsibility to inform the supervisor of any work or medical restrictions.

NOTE: *All managers, supervisors, and foremen have access to current employee medical restrictions, certifications, and surveillances through the OMP database. This allows management to review medical restrictions, surveillances, and certifications before assigning work tasks to employees.*

8.1 Subcontractor Workers

If subcontractors who perform project activities may be exposed to hazardous substances or health hazards at or above the established permissible exposure limits, without regard to the use of respirators, for 30 days or more a year, they shall participate in a subcontractor medical surveillance program that satisfies the requirements of 29 CFR 1910.120(f). The physician's written opinion will serve as documentation that subcontractor personnel are fit for duty.

Medical data from the subcontractor employee's private physician, collected pursuant to hazardous material worker qualification, shall be made available to the INEEL OMP physicians upon request. A subcontractor employee's past radiation exposure history may be requested and, if so, will be submitted to the BBWI radiation dosimetry and records section, in accordance with applicable company policies, manuals, and procedures.

8.2 Injuries at the Project Site

It is the policy of the INEEL that an INEEL OMP physician examine all injured personnel under the following conditions:

- An employee is injured on the job
- An employee is experiencing signs and symptoms consistent with exposure to a hazardous material

- An employee is believed to have been exposed to toxic substances or physical or radiological agents in excess of allowable limits during the course of a project at the INEEL.

NOTE: *In the event of an illness or injury, the decision to provide first aid and transport to the nearest medical facility or whether to immediately request an ambulance and continue to stabilize and provide first aid care should be based on the nature of the injury or illness and likelihood that transporting the individual may cause further injury or harm. Most likely, the person making this decision will only be trained to the medic first aid/CPR level and should contact the CFA medical facility at 777 or 526-1515 for further guidance if there is any question as to the extent of injury or potential to cause further harm by movement of the injured individual.*

In the event of a known or suspected injury or illness caused by exposure to a hazardous substance or physical or radiological agent, the employee will be transported to the nearest INEEL medical facility for evaluation and treatment, as necessary. The FTL or STR and HSO are responsible for obtaining as much of the following information as is available to accompany the individual to the medical facility:

- Name, job title, work location, and supervisor's name and phone number
- Substance, physical or radiological agent exposed to (known or suspected), and MSDS, if available
- Nature of the incident and injury or exposure and associated signs or symptoms of exposure
- First aid or other measures taken
- Locations, dates, and results of any relevant personal or area exposure monitoring or sampling
- List of PPE worn during this work (e.g., type of respirator and cartridge used).

Further medical evaluation will be determined by the treating or examining physician in accordance with the signs and symptoms observed, hazard involved, exposure level, and specific medical surveillance requirements established by the OMP director in compliance with 29 CFR 1910.120.

NOTE: *In the event of an illness or injury, subcontractor employees will be taken to the closest INEEL medical facility (CFA-1612) (if doing so will not cause further injury or harm) or be transported by INEEL ambulance to have an injury stabilized before transport to the subcontractor's treating physician or off-Site medical facility.*

The INTEC shift technical lead and project manager will be contacted if any injury or illness occurs at the project site. As soon as possible after an injured employee has been transported to the INEEL medical facility, the FTL or STR or designee will make notifications as indicated in Section 10.6.1, "Notifications."

Radiological Control personnel will evaluate all actual or suspected abnormal radiological exposures in excess of allowable limits and will establish the follow-up actions. For internal uptakes (as calculated committed effective dose equivalent values), applicable company documents and procedures will be used as the basis for this evaluation and follow-up actions. All wounds will be examined by an OMP physician to determine the nature and extent of the injury. The RadCon supervisor in conjunction with an OMP physician will determine whether the wound can be bandaged adequately for entry into a radiological contamination area in accordance with applicable company documents and procedures.

8.3 Substance-Specific Medical Surveillance

Project operations will involve the excavation, handling, packaging, and shipment of VES-SFE-20 tank waste contaminated with radiological and chemical constituents (see Tables 2-2 and 2-3). Additionally, asbestos-abatement tasks will be conducted in conjunction with tank-piping removal tasks. Several of the nonradiological waste constituents have OSHA substance-specific standards that govern the manner in which personnel monitoring and medical surveillance is conducted (Table 8-1). These substances have exposure action levels (see Table 2-4) that trigger medical surveillance requirements. Based on the engineering controls to be used during asbestos abatement and other contamination area tasks (e.g., confinement, barriers, and negatively pressured HEPA-filtered ventilation system) and work practices (e.g., wetting asbestos and use of spray fixative), exposure levels are not anticipated to reach regulatory medical surveillance action levels. Exposure monitoring will be conducted as described in Section 3 and as required by OSHA regulatory substance-specific standards. The IH should be consulted about applicability and implementation of substance-specific standards.

Table 8-1. Substance-specific regulatory medical surveillance action level for project chemicals.

Substance	Applicable Standard	Medical Surveillance Action Level
Asbestos	29 CFR 1910.1001	0.1 f/cm ³ ^a 8-hour TWA
	29 CFR 1926.1101	1.0 f/cm ³ ^a excursion limit
Cadmium	29 CFR 1910.1027	2.5 µg/m ³ 8-hour TWA
Formaldehyde	29 CFR 1910.1048	0.5 ppm 8-hour TWA
		2 ppm STEL
Methylene chloride	29 CFR 1910.1052	25 ppm 8-hour TWA
		125 ppm STEL

a. f/cm³ = fibers per cm³

STEL = short-term exposure limit
TWA = time-weighted average

All project activities will be evaluated to determine the hazards and potential exposures to project personnel in accordance with applicable company policies and procedures. The IH and RadCon personnel will conduct exposure assessments for each operation to determine the potential for exceeding exposure limits. The regulatory requirements for each OSHA-mandated substance-specific standard will be reviewed against exposure monitoring data (where available) and in the context of the exposure potential by the IH using professional judgment. For project operations involving chemicals listed in 29 CFR 1910.1003, “13 Carcinogens,” and applicable company policies and procedures will be followed.

All exposures to ionizing radiation will be evaluated in accordance with applicable company manuals, and, where deemed appropriate, be controlled through the use of an RWP in accordance with applicable company policies and procedures.

If new contaminants of concern are identified during the course of VES-SFE-20 Project activities, exposures will be evaluated and quantified to determine the exposure concentration. If regulatory mandated substance-specific standard action levels are triggered, then affected personnel will be enrolled in applicable substance-specific medical surveillance programs.

9. KEY SITE PERSONNEL RESPONSIBILITIES

The organizational structure for this project reflects the resources and expertise required to perform the work while minimizing risks to worker health and safety, the environment, and the public. Key project positions, lines of responsibility, and communication are shown on the organization chart for the Site (see Figure 9-1). This organization chart is not all-inclusive, but shows the structure for key resources assigned to complete project tasks. The Clean/Close INTEC Project Execution Plan (see footnote a), details roles and responsibilities for program personnel above the project manager level. The following text outlines the responsibilities of key site personnel.

A person will be considered onsite when they are present in the support zone, designated work areas, or controlled work areas. If there is no potential for exposure to chemical, radiological, or safety hazards (e.g., down time), a visitor may be escorted at the project site after receiving a site orientation consisting of the following:

- An overview of the controlled areas at the site and access restrictions
- Potential general site hazards and mitigation
- Required PPE for entry to the site (must be trained to wear required PPE)
- Emergency action to take in case of a take-cover or evacuation alarm
- Evidence of meeting the minimum training requirements.

NOTE: *Visitors will not be allowed into controlled work areas (even with proper training) during active soil-disturbance activities and probing operations to minimize the risk of injury or exposure. The determination as to any visitor's need for access into the controlled work areas during such tasks will be made by the HSO in consultation with the project RCT when radiological controls are being used.*

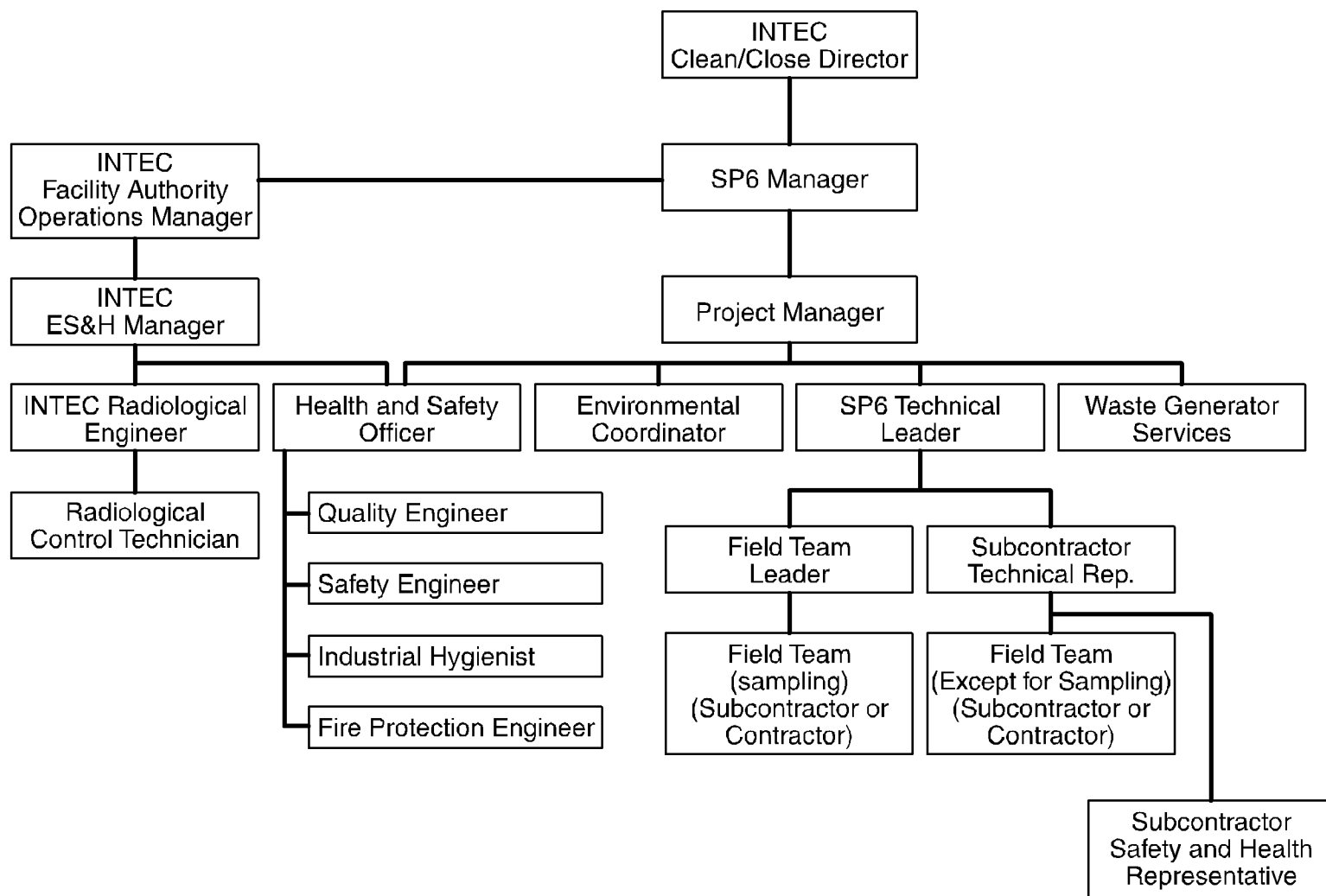
A fully trained task-site representative (e.g., FTL, STR or HSO, or a designated alternate) will escort visitors when entering controlled areas of the project site, as site conditions warrant and as deemed appropriate by the FTL, STR, or HSO.

9.1 Task Site Responsibilities

9.1.1 Field Team Leader

The FTL represents the Clean/Close INTEC SP-6 organization at project site(s) with delegated responsibility for the safe and successful completion of the project tasks. The FTL will manage tasks and execute the applicable field sampling plans, technical procedures, and other project-specific documents. The FTL serves as the lead for all routine monitoring tasks and may temporarily serve as the HSO based on the qualifications and complexity of the activities. The FTL enforces site control, documents activities, and conducts (or may delegate to an appropriately trained alternate) daily prejob briefings at the start of the shift. Health and safety issues must be brought to the attention of the FTL. The FTL will report project status on a regular basis to the project manager. Additional responsibilities include, but are not limited to, the following:

INTEC Clean/Close Organization Chart



03-GA50961-01

Figure 9-1. Operable Unit 3-14 Tank Farm soil remedial investigation and feasibility study organization chart.

- Ensuring all field activities are conducted in compliance with technical procedures, work orders, and associated ISMS requirements
- Ensuring field team personnel comply with INTEC facility and operations requirements (as applicable)
- Obtaining and coordinating resources needed to implement the fieldwork including equipment, labor, administrative, and technical permits with approvals
- Maintaining facility interface to schedule routine monitoring tasks through the facility plan of the day
- Directing subcontract personnel supporting tasks at the project site.

If the FTL leaves the site, an alternate will be appointed and that information shall be communicated to all field personnel. Persons acting as FTL must meet all the FTL training requirements outlined in Section 6.

9.1.2 Health and Safety Officer

The HSO is a representative of the Clean/Close INTEC organization assigned to the task site who serves as the primary contact for all health and safety issues. The HSO advises the FTL/STR on all aspects of health and safety and is authorized to stop work at the task site if any operation threatens worker or public health or safety. The HSO is authorized to verify compliance to the HASP, conduct inspections and self-assessments, require and monitor corrective actions, and monitor decontamination procedures as appropriate. The safety and health professionals at the task site (e.g., safety professional, IH, environmental coordinator, and facility representative) supporting the HSO are from the Clean/Close INTEC organization.

Persons assigned as the HSO or alternate HSO must be qualified (in accordance with the definition in 29 CFR 1910.120) to recognize and evaluate hazards and will be given authority to take or direct actions to ensure that workers are protected. While the HSO may also be the IH, safety professional, or in some cases the FTL (depending on the hazards and complexity of the activity involved), other task-site responsibilities of the HSO must not interfere with the primary role of the HSO at the task site.

If it is necessary for the HSO to leave the site, an alternate individual will be appointed by the HSO to fulfill this role and the identify of that person will be communicated to key project personnel.

9.1.3 Subcontractor Technical Representative

The STR is the individual matrixed to the Clean/Close INTEC organization representing remedial investigation and feasibility study action management at the site, with ultimate responsibility for the safe and successful completion of assigned project tasks. The STR reports directly to the Clean/Close INTEC SP-6 technical lead or project manager. The STR manages field operations and executes the work plan, enforces site controls and documents task-site activities, and conducts the daily prejob briefing at the start of the shift. All health and safety issues at the task site must be brought to the STR's attention. The STR also will serve as the primary area warden during the project.

If the STR leaves the project site, an alternate individual may be appointed to act as the STR. Persons acting as STR on the project site must meet all STR training requirements outlined in Section 7

of this project HASP. The identity of the acting STR will be conveyed to task-site personnel, recorded in the daily logbook, and communicated to the facility representative.

If the nature of the fieldwork requires involvement of field team staffing by equipment operators, laborers, or other crafts, a representative from the organization supplying these additional resources interfaces with the STR to provide work supervision. This person may be designated the job site supervisor (JSS).

9.1.4 Industrial Hygienist

The assigned IH from the Clean/Close INTEC organization is the primary source for information about exposure assessments for the project chemical, physical, and biological hazards at the task site. The IH assesses the potential for worker exposures to hazardous agents in accordance with companywide safety and health manuals, MCPs, and industry-accepted IH practices and protocol. By participating in project planning, the IH assesses and recommends appropriate hazard controls for the protection of site personnel, operates and maintains airborne sampling and monitoring equipment, reviews engineering controls for effectiveness, and recommends and assesses the use of PPE as required in this HASP (recommending changes as appropriate).

Personnel showing health effects (i.e., signs and symptoms) resulting from possible exposure to hazardous agents will be referred to an OMP physician by the IH, supervisor, or HSO. The IH may have other duties at the site as specified in other sections of this HASP or in PRDs and/or MCPs.

9.1.5 Safety Professional

The assigned Clean/Close INTEC safety professional reviews work packages, observes site activity, assesses compliance with the companywide safety and health manuals, and also serves as the HSO on required safety equipment and recommends solutions to safety issues and concerns that arise at the task site. The safety professional may conduct periodic inspections in accordance with MCP-3449, "Safety and Health Inspections," and may have other duties at the task site as specified in other sections of this HASP or in PRDs and MCPs. Copies of any safety and health inspections will be kept in the project field file.

9.1.6 Radiological Engineer

The assigned Clean/Close INTEC radiological engineer is the primary source for information and guidance relative to the evaluation and control of radioactive hazards at OU 3-13 VES-SFE-20 hot waste tank system sites. If a radiological hazard exists or occurs at a OU 3-13 VES-SFE-20 hot waste tank system site, the radiological engineer makes recommendations to minimize health and safety risks to site personnel. Responsibilities of the radiological engineer include

- Performing radiation-exposure estimates and ALARA evaluations
- Identifying the type(s) of radiological monitoring equipment necessary for the work
- Advising the HSO and RCT of changes in monitoring or PPE
- Advising personnel on site evacuation and reentry.

The radiological engineer may also have other duties to perform as specified in other sections of this HASP, or in accordance with Companywide *Manual 15B - Radiation Protection Procedures*.

9.1.7 Radiological Control Technician

The assigned RCT is the primary source for information and guidance on radiological hazards that may be encountered during project tasks and controls necessary to mitigate them. Responsibilities of the RCT include the following:

- Performing radiological surveying of the site, equipment, and samples
- Providing guidance for radioactive decontamination of equipment and personnel
- Accompanying affected personnel to the nearest INEEL medical facility for evaluation if significant radionuclide contamination occurs.

The RCT must notify the FTL/STR and HSO of any radiological occurrence that must be reported, as directed by PRD-183, "Radiation Protection–INEEL Radiological Control Manual."

9.1.8 Fire Protection Engineer

The Clean/Close INTEC fire protection engineer is available to provide technical guidance to the HSO and FTL about all fire protection issues and may be assigned to review the work packages and conduct preoperational and operational fire hazard assessments. The INEEL fire department also may need to be advised of fuel storage areas (if required) and will provide authorization for all hot work operations performed at the project site during times of high-to-extreme fire danger. The fire protection engineer is required to sign all safe work permits used as hot (radiological) work permits within the jurisdiction of the facility site area director.

9.1.9 Sampling Team

The sampling team, if appointed, will consist of the FTL and support personnel and is responsible for the collection, preservation, and shipping of all routine monitoring samples in accordance with the applicable field sampling plan and technical procedures. The IH and safety professional will support the sampling team, as required, based on site-specific hazards and task evolutions. The sampling team will be led by a sampling FTL who also may perform other roles during the project.

Specialty subcontractors may be used to support equipment maintenance or waste stream characterization, handling, and shipping. A subcontractor lead will serve as the single point of contact for all subcontractor communication at the site and will report to the FTL/STR for all technical direction and interface issues at the project site. Subcontractor personnel will report any health and safety issues that arise to the HSO and FTL/STR who may stop work if an unsafe condition exists. The subcontractor lead will also be asked to provide hazard identification and mitigation information about the nature of their equipment or operations during the prejob-briefing meeting and will participate in job-site hazard walkdowns where appropriate.

9.1.10 Field Team Personnel

All field team personnel, including facility and subcontractor support personnel assigned to the project, will understand and comply with the requirements of this HASP. The FTL/STR (or designee) will conduct a formal prejob briefing at the start of each shift. During the prejob briefing, all daily tasks, associated hazards, hazard mitigation (e.g., engineering and administrative controls, required PPE, and work control documents), and emergency conditions and actions will be discussed. Input from the project HSO, IH, and safety personnel (where assigned) will be provided to clarify task health and safety

requirements. All project personnel are encouraged to ask questions about site tasks and provide suggestions on ways to perform required tasks in a more safe and effective manner based on the lessons learned from previous similar activities.

Once at the project site, field team personnel are responsible for identifying potentially unsafe situations or conditions to the HSO and FTL/STR with associated corrective action.

NOTE: *If it is perceived that an unsafe condition poses an imminent danger, site personnel are encouraged and authorized to stop work immediately and notify the HSO and FTL/STR of the unsafe condition.*

9.1.11 Nonfield Team Personnel

All persons who may be at a project site and are not part of the field team (e.g., surveyors or others not assigned a field team support role) are considered nonfield team personnel as defined by this HASP. A person will be considered onsite when they are present in the support zone, designated work areas, or controlled work areas.

Nonfield team personnel are considered occasional site workers in accordance with the HAZWOPER and must receive site-specific HASP training in addition to 24-hour HAZWOPER training, and required training outlined in Table 6-1 at a minimum, before entering work areas at the project site. A site supervisor (e.g., HSO or FTL/STR) will supervise nonfield team personnel who have not completed 3 days of supervised field experience in accordance with the HAZWOPER requirements.

9.1.12 Visitors

All visitors with official business at the project site (including ICP personnel, representatives of DOE, and state or federal regulatory agencies) may only proceed beyond the support zone after meeting the following requirements:

- Receive site-specific HASP training or hazard briefing based on specific tasks taking place
- Sign a HASP training roster and provide proof of having met all training requirements specified in Section 6 (or required access training for the area to be visited when project tasks are not being conducted)
- Participate in a prejob briefing in accordance with MCP-3003, “Performing Pre-Job Briefings and Post-Job Reviews”
- Provide objective evidence of PPE training and wearing the appropriate PPE for the area of the site to be accessed (29 CFR 1910.132).

If there is no potential for exposure to chemical, radiological, or safety hazards, a visitor may be escorted at the project site after receiving a site orientation consisting of the following

- Overview of the controlled areas at the site and access restrictions
- Potential general site hazards and mitigation
- Required PPE for entry to the site (must be trained to wear required PPE)
- Emergency action to take in case of a take-cover or evacuation alarm.

NOTE: *Visitors will not be allowed into controlled work areas (even with proper training) during active soil removal activities and hoisting operations to minimize the risk of injury or exposure. The determination as to any visitor's need for access into the controlled work areas during such tasks will be made by the FTL or HSO in consultation with the project RCT as appropriate.*

A fully trained task-site representative (e.g., FTL, STR, or HSO, or a designated alternate) will escort visitors when entering controlled areas of the project site, as site conditions warrant, and as deemed appropriate by the FTL, STR, or HSO.

A casual visitor to the task site is a person who does not have a specific task to perform or other official business to conduct at the project site. Casual visitors are not permitted in work zones or designated work areas at any project site.

9.2 Facility (INTEC) Responsibilities

9.2.1 Clean/Close INTEC Subproject 6 and INTEC Interface

The Clean/Close INTEC SP-6 STR serves as the point of contact for work coordination. The Clean/Close INTEC SP-6 STR provides advance notice to the project management team (PMT) of scheduled activities (including documents requiring facility review or approvals) that impact site area operations, and provides advance notice of site area operations that may impact SP-6 activities.

9.2.2 INTEC Work Authorization

The INTEC Clean/Close director is responsible for all operational activities at INTEC and must be cognizant of work being conducted in the facility. The Clean/Close INTEC SP-6 project manager is responsible for evaluating all activities with respect to the OU 3-13 VES-SFE-20 hot waste tank system safety authorization and for approving all work packages and JSAs. The SP-6 project manager will be kept informed of the project status through the STR and SP-6 task leader and the facility plan-of-the-day for activities performed at INTEC.

All activities will be scheduled through the facility as well as through work packages and procedures, which will be referred to daily as required. The FTL/STR (or designee) will provide authorization (i.e., signature on work order or technical procedure) to initiate daily activities.

The Clean/Close INTEC SP-6 HSO will provide project safety and health support for field activities and serves as the primary contact for all health and safety issues.

9.3 Project Management Team

The PMT, headed by the INTEC Clean/Close director, is responsible for developing and managing the project and the coordinating project operations. The PMT ensures that operations, Federal Facility Agreement and Consent Order compliance support, surveillance, and monitoring activities are conducted in accordance with applicable INEEL MCPs and PRDs, and all applicable OSHA, U.S. Environmental Protection Agency, DOE, U.S. Department of Transportation, and State of Idaho requirements, and that tasks comply with Plan (PLN) -694, "Project Execution Plan for the Balance of INEEL Cleanup Project," and this HASP. The PMT is responsible for the overall work scope, schedule, and budget for this project.

10. EMERGENCY RESPONSE PLAN

This emergency response plan defines the roles and responsibilities of project personnel during an emergency. Such an emergency could be at the project site, on a tenant facility or collocated facility, or a Site-wide emergency. This section provides details of the ICP Emergency Response Organization and PLN-114, "INEEL Emergency Plan RCRA Contingency Plan," information. Plan-114 describes the overall process developed to respond to and mitigate consequences of emergencies that might arise at the INEEL.

Plan-114 may be activated in response to events occurring at the project site, at the INEEL, or at the discretion of the emergency coordinator or emergency action manager. Once the INEEL plan is activated, project personnel will follow direction and guidance communicated by the emergency coordinator.

NOTE: *The OSHA HAZWOPER definition of an emergency is not the same as the one in DOE Orders 151.1A, "Comprehensive Emergency Management System," and 231.1A, "Environment, Safety, and Health Reporting." For this reason, the term "event" will be used in this section when referring to project HAZWOPER emergencies.*

10.1 Preemergency Planning

Plan-114 provides the basis for preplanning all INEEL emergency events. This base plan is supplemented with INEEL facility-specific addenda. This preplanning makes it possible for the project to anticipate and appropriately respond to abnormal events that can affect project activity. Preplanning also ensures that the project emergency response program is integrated with that of the INEEL. Specific procedures for addressing emergency events and actions to be taken are further described in the facility-specific emergency implementing procedures. Finally, the HASP addresses project-specific hazards, potential emergency events, and the actions to take following such events.

10.2 Emergency Preparation and Recognition

The sections for hazard identification and mitigation and accident prevention provided the strategy that will be followed at the project site to prevent accidents. Similarly, emergency preparation and recognition also will require project personnel to be constantly alert for potentially hazardous situations and signs and symptoms of chemical exposure or releases. All field personnel should be familiar with the techniques for hazard recognition, and the assigned action levels and associated actions to be taken as identified in Section 3.

Requirements from MCP-2725, "Field Work at the INEEL," for training, emergency actions, and notifications will be followed for all projects conducted outside facility boundaries.

Preparation and training for emergencies will include proper site access and egress procedures in response to project events and INEEL emergencies as part of the project-specific HASP training and facility access training where applicable. Visitors also will receive this training on a graded approach based on their site access requirements. Visitor training will include alarm identification, location, and use of communication equipment, location of site emergency equipment, and evacuation. Emergency phone numbers and evacuation route maps will be located in the project trailer.

On-scene response to and mitigation of site emergencies could require response from both project personnel and INEEL fire department personnel. Emergencies could include the following scenarios:

- Accidents resulting in injury
- Fires
- Spills of hazardous or radiological materials
- Tornadoes, earthquakes, or other adverse natural phenomena
- Vehicle or transportation emergencies
- Safeguard and security emergencies
- Emergencies at nearby facilities that could prompt evacuation or take-cover actions at the task site.

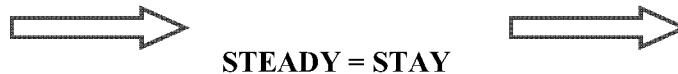
10.3 Emergency Alerting, Responses, and Sheltering

10.3.1 Alarms

Alarms and signals are used at the project site and the INEEL to notify personnel of abnormal conditions that require a specific response. Responses to these alarms are addressed in general employee training. Emergency sirens located throughout the INEEL serve as the primary means for signaling emergency TAKE COVER or EVACUATION protective actions. To signal site personnel of a project-initiated emergency event, a separate set of emergency signals has been established based on horn blasts (e.g., vehicle or air horn).

Depending on the field location (within or outside a facility), facility alarms may not be able to be heard at the project site. If the project site is outside the audible range of the facility alarms, then the notification to take cover or evacuate should be received on the field radio. The project signals will then be used to alert personnel of the emergency actions.

10.3.1.1 Take Cover—Continuous Siren. Radiation or hazardous material releases, adverse weather conditions, or other event or emergency conditions may require that all personnel take cover indoors in the nearest building. A TAKE COVER protective action may be initiated as part of a broader response to an emergency situation and may precede an evacuation order. The order to TAKE COVER is usually announced by activating the emergency siren. The signal to take cover is a CONTINUOUS SIREN.



However, the order to take cover also can be given by word of mouth, radio, or voice paging system. When ordered to TAKE COVER, project personnel will place the site and equipment in a safe configuration (as appropriate) and then seek shelter in the project trailer or vehicle (if outside the facility). Eating, drinking, and smoking are not permitted during take-cover conditions.

10.3.1.2 Total Area Evacuation—Alternating Siren. A total area evacuation is the complete withdrawal of personnel from the project site and the entire facility area. The evacuation signal is an ALTERNATING SIREN. When ordered to EVACUATE, project personnel will place equipment and the site in a safe configuration (as appropriate) and then proceed along the specified evacuation route to the designated assembly area or as directed by the emergency coordinator.



ALTERNATE = EVACUATE



For total area evacuations, the facility command post is activated and all personnel will gather at the primary facility evacuation assembly area or the location designated by the EC or FTL/STR if outside a facility. The FTL/STR or trained alternate will then complete the personnel accountability using the attendance log. In this situation, the project area warden will report the result of the accountability process to the facility emergency coordinator.

10.3.1.3 Local Area Evacuation—Vehicle Horn Blast. A local area evacuation is the complete withdrawal of personnel from the project site but it does not require the complete evacuation of the entire facility or INEEL area. A single long horn blast (e.g., vehicle) will serve as the project’s primary emergency evacuation signal (as listed on Table 10-1). However, the order to evacuate also can be given by word of mouth, radio, or voice paging system. When ordered to evacuate the project site, personnel will place the site in a safe condition (as appropriate) and then proceed along the specified evacuation route to the assembly area designated for local area evacuations or as directed by the FTL/STR. Eating, drinking, and smoking are not permitted during emergency evacuations.

Table 10-1. Project internal emergency signals.

Device or Communication Method	Signal and Associated Response
Vehicle horn blasts	<p>One long blast—Emergency evacuation, evacuate project site immediately. Proceed in an upwind direction to designated assembly area as specified by the FTL/STR.</p> <p>Two short blasts—Nonemergency evacuation of immediate work area. Proceed to designated assembly area as specified by the FTL/STR.</p> <p>Three long blasts or verbally communicated—All clear, return to project site.</p>
<p>FTL = field team leader STR = subcontractor technical representative</p>	

10.4 Personnel Roles, Lines of Authority, and Training

10.4.1 INEEL Emergency Response Organization

The INEEL Emergency Response Organization structures are based on the incident command system and are described in PLN-114 and facility-specific addendums to that plan.

10.4.2 Role of Project Personnel in Emergencies

Depending on the event, a graded response and subsequent notifications will take place. FTL/STR and project personnel responsibilities are described below. Personnel will respond to emergencies only within the limits of their training and designated by their position. All personnel must be trained to the facility-specific emergency actions as part of the access training or will be escorted by someone who has been trained. Emergency response actions also will be covered as part of the HASP briefing as stated in Table 6-1.

10.4.2.1 Field Team Leader. The FTL (or designated alternate) is responsible for initiating all requests for emergency services (e.g., fire and medical) and for notifying the construction coordinator of abnormal or potential emergency events that may occur during the project. The FTL will also serve as the area warden, or designate that responsibility to another person who has been trained as area warden, and

will conduct personnel accountability. Personnel accountability will be reported to the shift supervisor. Additionally, the FTL will control the scene until a higher-tiered incident command system authority arrives at the scene to take control. When relinquishing this role, the FTL (or designated alternate) will provide all information about the nature of the event, potential hazards, and other information requested.

10.4.2.2 Project Personnel. Every person at the project site has a role to play during a project event or INEEL emergency. Each employee must be constantly aware of potential problems or unexpectedly hazardous situations and immediately report these situations to the FTL/STR. All personnel are expected to watch out for their fellow workers, to report their concerns to the FTL/STR, and to take emergency actions as described in this section. Roles and responsibilities are further detailed in Table 10-2.

Table 10-2. Responsibilities during an emergency.

Responsible Person	Action Assigned
FTL (or designee)	Signal evacuation. Report spill to shift supervisor and take mitigative actions. ^a Contact shift supervisor or WCC (if the shift supervisor cannot be contacted).
FTL (or trained designee)	Serve as area warden and conduct accountability and report to shift supervisor.
HSO and medic and first aid trained personnel	Administer first aid to victims (voluntary basis only).

a. The environmental affairs spill response categorization and notification team will be contacted by the shift supervisor or emergency coordinator.

FTL = field team leader
HSO = health and safety officer
WCC = Warning Communications Center

10.4.2.3 Personnel Accountability and Area Warden. Project personnel are required to evacuate the site in response to TAKE COVER, EVACUATION, and local evacuation alarms. In all cases, the FTL/STR or trained designee will account for the people present on the project site. The FTL/STR or trained alternate will serve as the area warden for the project and will complete the personnel accountability following positive sweeps of the project site based on the attendance log. The results of this accountability will then be communicated to the FTL/STR for reporting to the shift supervisor or emergency coordinator if the command post has been formed.

10.4.2.4 Spills. If the material spilled is known and is small enough to be safely contained at the task site, task-site personnel will handle spill control using spill supplies at the site and immediately report the incident to the shift supervisor or the Warning Communications Center (WCC) if the shift supervisor cannot be contacted. Reporting requirements will be determined by the facility emergency coordinator in accordance with MCP-190, “Event Investigation and Occurrence Reporting.” If any release of a hazardous material occurs, task-site personnel will comply with the following immediate spill response actions.

10.4.2.4.1 Untrained Initial Responder—The requirements for the untrained initial responder, or if the material characteristics are unknown, are listed below:

- Place equipment in a safe configuration

- Evacuate and isolate the immediate area
- Notify and then seek help from and warn others in the area
- Notify the FTL/STR.

10.4.2.5 Trained Responder. The requirements for the trained responder where material characteristics are known and no additional PPE is required are listed below:

- Place all equipment in a secure configuration
- Seek help from and warn others in the area
- Stop the spill if it can be done without risk (e.g., returning the container to the upright position, closing valve, and shutting off power)
- Provide pertinent information to the FTL/STR
- Secure any release paths if it is safe to do so.

10.5 Medical Emergencies and Decontamination

Medical emergencies and responses to injuries or suspected exposures will be handled as stated in Section 8.2. Decontamination of personnel and equipment is described in Section 11.2.

10.6 Emergency Communications

In the event of an emergency, the capability to summon INEEL emergency response resources to immediately notify site personnel, and to inform others of site emergencies is required. Communications equipment at the task site will be a combination of radios, telephones (e.g., mobile, cellular, or facility), and pagers. Communication methods described below will be used during emergency situations.

10.6.1 Notifications

During emergency situations, the facility shift supervisor will be notified of any project emergency event. The shift supervisor will then make the required ERO notification. The following information should be communicated, as available, to the shift supervisor:

- The caller's name, title (e.g., FTL/STR or HSO), telephone number, and pager number
- Exact location of the emergency
- Nature of the emergency including time of occurrence, current site conditions, and special hazards in the area
- Injuries, if any, including numbers of injured, types of injuries, and conditions of injured
- Emergency response resources required (e.g., fire, hazardous material, and ambulance)
- Additional information as requested.

NOTE: *If the shift supervisor cannot be contacted, then the WCC will be notified of the event and the above information will be communicated. The WCC also must be told that notification to the facility shift supervisor and emergency coordinator has not been made.*

10.7 Emergency Facilities and Equipment

Emergency response equipment maintained at the project site includes the items listed in Table 10-3. The INTEC facility-specific addendum to PLN-114 lists emergency equipment available at the facility. This includes the command post, self-contained breathing apparatus, dosimeters, air samplers, decontamination and first aid equipment, and an emergency response trailer. The INEEL fire department maintains an emergency hazardous material response van that can be used to respond to an event or emergency at the project. Fire department personnel are also trained to provide immediate hazardous material spills and medical services. Additionally, the CFA-1612 medical facility is manned by medical personnel to evaluate and stabilize injured personnel or those experiencing signs and symptoms of exposure.

Table 10-3. Emergency response equipment to be maintained at the project site during operations.

Equipment Name and Quantity Required	Location at Task Site	Responsible Person	Frequency of Inspection or Verification ^a
First-aid kit	Project vehicle or near decontamination work area or CWA	HSO	Monthly: verify at least 50% of original contents are available for use.
Eyewash bottles ^b Eyewash station ^b	In or near decontamination work area or CWA	HSO	Monthly
Extra PPE ^a	Project vehicle or support trailer	HSO	Daily
Communication equipment (operational) ^a	Onsite	FTL	Daily radio check
Fire extinguishers ^c	In or near decontamination work area or CWA	HSO	Monthly

a. This is verification that equipment is present at the project location before starting tasks and no inspection tag is required.

b. An eyewash bottle will be used to provide an immediate eye flush if required. The location of the eyewash station will be identified by the HSO during the prejob briefing.

c. A minimum of one 10A/60BC extinguisher is required. If it is discharged, it will be returned for servicing and recharging.

CWA = controlled work area

FTL = field team leader

HSO = health and safety officer

PPE = personal protective equipment

10.8 Evacuation Assembly Areas and Central Facilities Area Medical Facility

The INTEC maintains primary and secondary evacuation routes and assembly areas (see Figure 10-1). These routes may be used in response to a total facility area evacuation as directed by the emergency coordinator. Copies of the evacuation assembly areas and the CFA-1612 medical facility route (see Figure 10-2) will be available at the project site.

NOTE: *Workers at CPP-37A and CPP-67 will assemble at the southeast staging area (see Figure 10-2).*

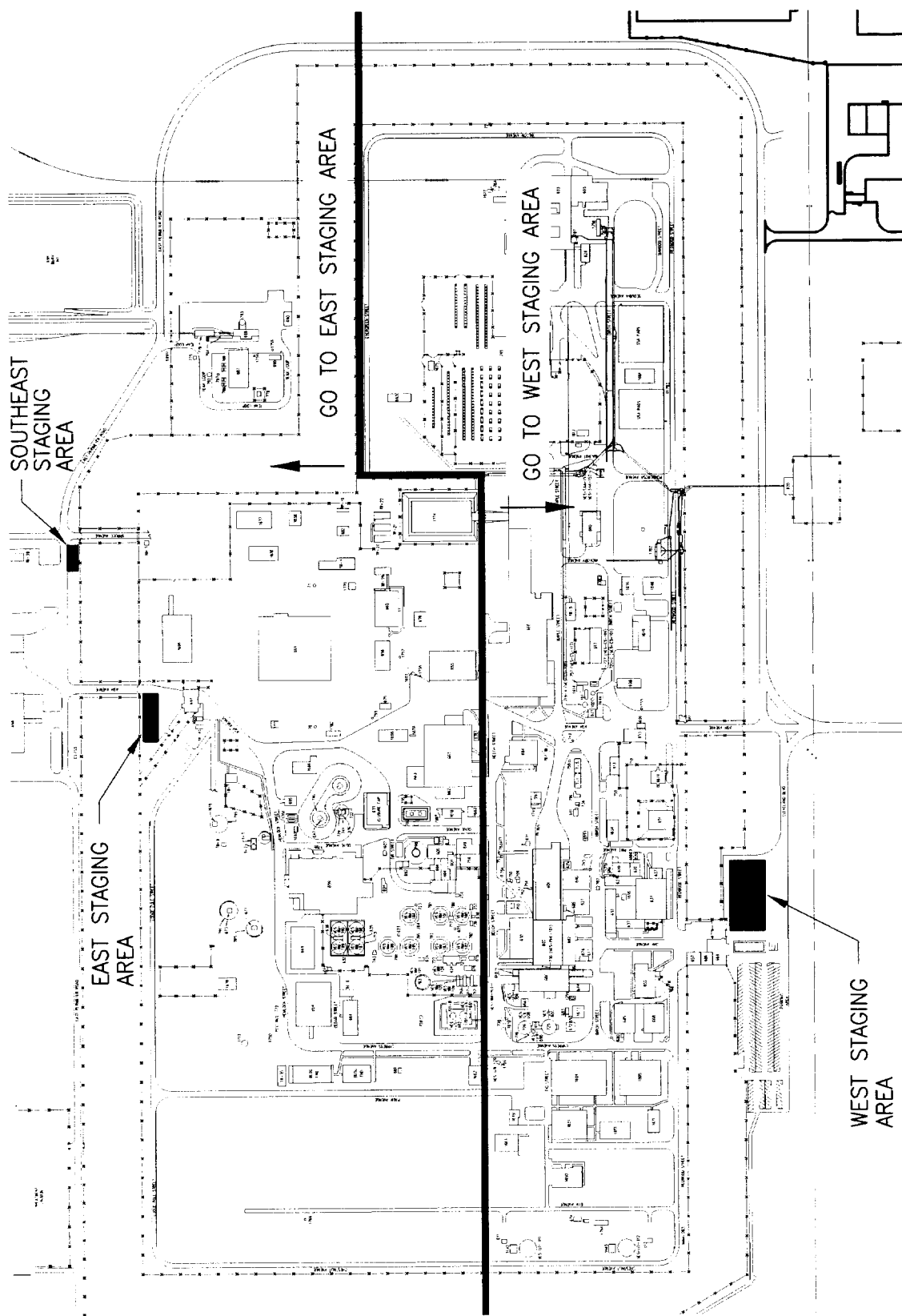


Figure 10-1. Primary and secondary evacuation assembly areas at INTEC

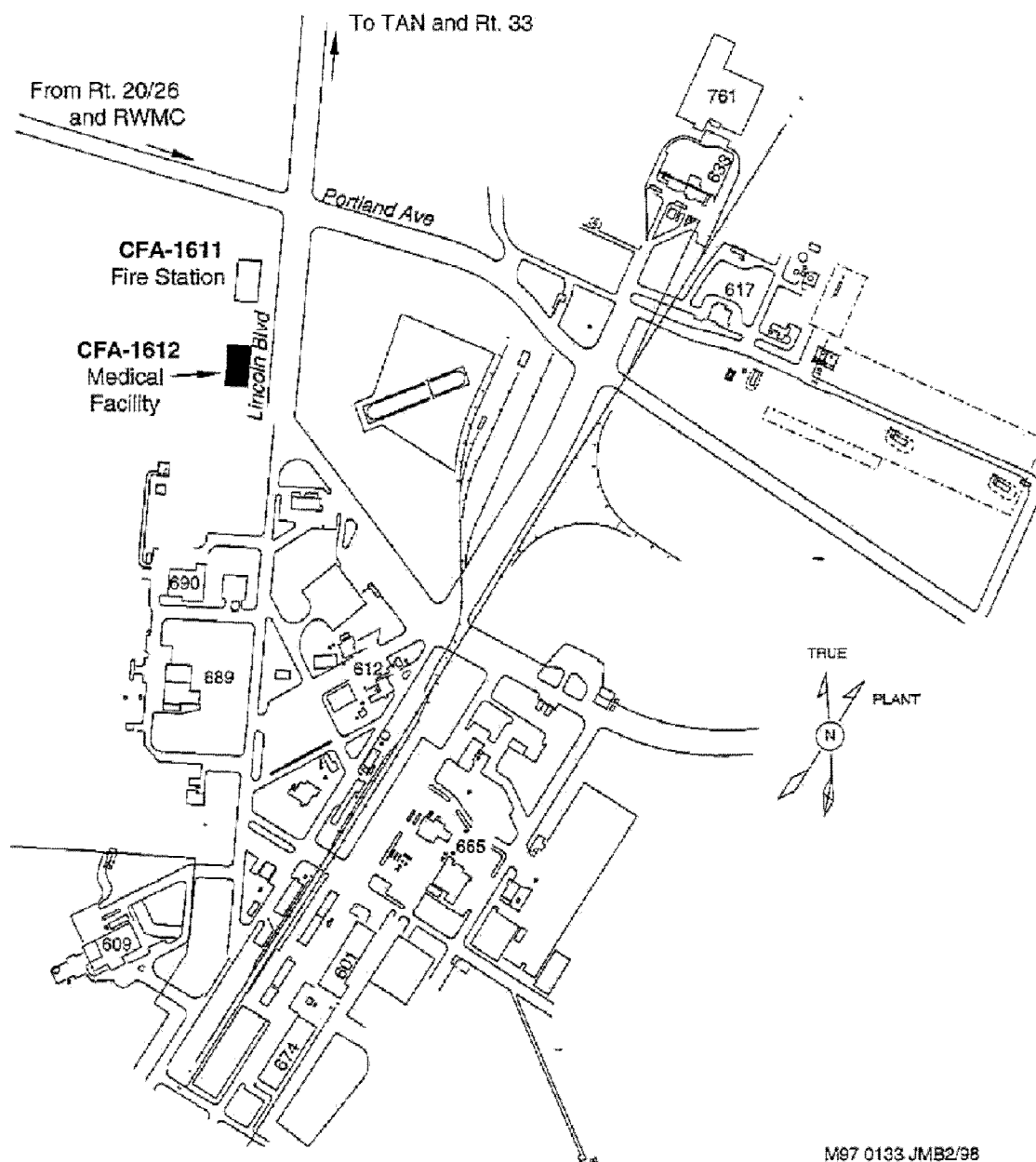


Figure 10-2. Map showing the route to the nearest medical facility (CFA-1612).

10.9 Reentry, Recovery, and Site Control

All reentry and recovery activities will follow general site security and control requirements identified in Section 7 unless conducted as part of an emergency response action. All entries to the project site performed in support of emergency actions will be controlled by the on-scene commander.

10.9.1 Reentry

During an emergency response it is sometimes necessary to reenter the scene of the event. Reasons for performing a reentry may include:

- Performing personnel search and rescue
- Responding to medical first aid needs
- Performing safe shutdown actions
- Performing mitigating actions
- Evaluating and preparing damage reports
- Performing radiation or hazardous material surveys.

Reentries will be carefully planned to ensure that personnel are protected from harm and to prevent initiating another emergency event. Reentry planning is undertaken as a graded approach depending on the nature of the initiating event.

10.9.2 Recovery

After the initial corrective actions have been taken and effective control established, response efforts will shift toward recovery. Recovery is the process of assessing post-event and post-emergency conditions and developing a plan for returning to preevent and preemergency conditions, when possible, and following the plan to completion. The emergency coordinator and emergency action manager are responsible for determining when an emergency situation is sufficiently stable to terminate the emergency and enter the recovery phase. The project manager, with concurrence from the area site area director, will appoint the recovery manager.

10.10 Critique of Response and Follow-up

A review and critique will be conducted following all emergency events, drills, and exercises at the ICP. In some cases, an investigation may be required before commencing recovery actions. For this reason care should be exercised to preserve evidence when appropriate.

10.11 Telephone and Radio Contact Reference List

Table 10-4 lists the points of contact for the project. A copy of this list will be kept in the FTL/STR logbook. Because personnel listed may change frequently, working copies of this list will be generated as required to note new positions and changes of personnel assigned. A field document action request (Form 412.11) will be generated and the revised list posted to the FTL/STR logbook and distributed as warranted.

Table 10-4. Project emergency contact list.

Contact Title	Contact Name	Phone Number or Radio Net	Cellular Phone Number	Pager Number
Fire, medical emergency, and security WCC		777 6-1515		
STR	Bruce Birk			
INTEC plant shift supervisor	Duty Officer	6-3100		2096
Facility authority	Paul Yela	6-8899	521-0876	6264
Environment, safety, and health manager	Corrinne Jones	6-8079	520-4191	5728
RadCon supervisor	Dave Wirkus	6-3742	521-1648	3378
Radiological engineer	Larry Auman	6-2182	521-7570	7348
U.S. Department of Energy Idaho Operations Office facility representative	Rachel Collins Hall	6-1661		3422
Clean/Close director	R. Loos	6-4561	520-1189	6602
SP-6 Project manager	Doug Kuhns	6-8226	521-5560	6670
OU 3-13, Group 7 task lead	Lee Davison	6-3770	520-3707	
FTL	Mark Varvel	6-4424	520-6023	5945
HSO	L. McManamon	6-3658	521-8405	4903
Industrial hygienist	Cory Stolworthy	6-3430		5656
Fire protection engineer	Doug Clark	6-6465		9157
Clean/Close Program environmental compliance	Lee Tuott	6-7990		7855
FTL = field team leader HSO = health and safety officer INTEC = Idaho Nuclear Technology Engineering Center OU = operable unit RadCon = Radiological Control STR = subcontractor technical representative WCC = Warning Communications Center				

11. DECONTAMINATION PROCEDURES

It is anticipated that contamination (radiological and potentially chemical from process lines) will be encountered during the course of Phase I and II activities. Some cleanup of contaminated vault surfaces, debris, and some associated articles will likely be required (depending on the on the waste disposition path and nature of the contamination). Every effort will be made to prevent contamination of project personnel and equipment through the use of engineering controls, isolation of source materials, contaminant monitoring, personnel contamination control training, and by following material handling requirements and procedures for contaminated or potentially contaminated materials. Where contact with known or potentially contaminated surfaces is anticipated, engineering controls, in combination with PPE upgrades, will be necessary to control the contact hazard. This section provides guidance on how decontamination it will be performed where engineering controls and PPE do not prevent contamination or decontamination is determined to be required.

Engineering controls, in conjunction with contamination prevention and control practices and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. Applicable company policies and procedures contain information on personnel radionuclide decontamination. Radionuclide decontamination operations required for equipment or areas will be performed in accordance with applicable company manuals and at the direction of RadCon personnel

11.1 Contamination Control and Prevention

Contamination control and prevention procedures will be implemented to minimize personnel contact with contaminated surfaces if such surfaces are encountered or may be contacted during project activities. The use of engineering controls, protective barriers, spray fixative, protective clothing, modified work control practices, or addition of hold points and surveys will all be used to minimize direct contact with contaminated surfaces. The following contamination control and prevention measures will be employed where contamination is encountered or anticipated:

- Identify potential sources of contamination and design containment, isolation, and engineering controls to eliminate or mitigate any potential for contact or release of contaminants (e.g., spray fixative)
- Limit the number of personnel, equipment, and materials that enter the contaminated area
- Implement immediate decontamination procedures to prevent the spread of contamination (if contamination is found on the outer surfaces of equipment)
- Use only the established control entry and exit point from the contaminated area to minimize the potential for cross-contamination and expedite contamination control surveys
- Wear disposable outer garments and use disposable equipment (where possible)
- Use hold points defined in procedures and work orders to monitor for contamination where anticipated.

11.2 Equipment and Personnel Decontamination

Where available, decontamination procedures will be used for decontamination equipment, tools, and sampling equipment (as required). Both radiological and nonradiological contamination will be evaluated when decontaminating surfaces.

Radionuclide decontamination operations for equipment or areas will be performed in accordance with applicable company manuals and at the direction of RadCon personnel. Nonradionuclide decontamination will be conducted in accordance with established equipment decontamination procedures. The IH will determine the most appropriate PPE for such decontamination tasks on a case-by-case basis. In all cases, the collection, storage, and disposal of decontamination waste will be addressed before its generation (whenever possible). Protective clothing and respiratory protection selected for decontamination tasks will be based on the contaminant being decontaminated, applicable technical procedure, and JSA requirements.

11.2.1 Equipment Decontamination

Equipment used during Phase I and II activities may become contaminated from contact with contaminated surfaces or tank/piping contents. Once removed contaminated piping and debris will be placed in waste containers. Other isolation controls will be established such as spraying contaminated surfaces with fixative and establishing containment areas to prevent contamination of collocated structures and equipment from known or suspected sources of contamination. These controls will serve to isolate and eliminate or mitigate many of the potential contamination pathways to prevent equipment contamination and greatly reduce the need for decontamination.

When required, equipment decontamination will be conducted in accordance with applicable decontamination procedures where available. Low-cost consumable items will be discarded if initial decontamination efforts fail or extensive decontamination is required that is not in accordance with ALARA principles.

11.2.2 Personnel Decontamination

Engineering controls (such as negatively HEPA filtered containment areas), in conjunction with, work control practices, and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. The PPE selection, as identified in the RWP and JSA, will provide for a layered approach to prevent permeation of contaminants and minimize external surface contamination.

Where radiological contamination areas are established, procedures for donning and doffing protective clothing will be posted at the entrance and exit to the area. Before donning PPE, all items will be inspected following the list in Table 5-4. The greatest potential for personnel contamination exists from improper doffing of contaminated protective equipment when exiting a contamination area.

11.2.3 Decontamination in Medical Emergencies

If a person is injured or becomes ill, they should be immediately evaluated by first aid-trained personnel (within their level of training and on a voluntary basis) at the project site. If the injury or illness is serious, then the FTL or STR will contact the INTEC shift technical lead or the WCC (if the shift technical lead cannot be reached) to summon emergency services.

Medical care for serious injury or illness will not be delayed for decontamination. In such cases, gross decontamination may be conducted by removing the injured person's outer protective clothing (if possible) and other contaminated areas with a bag, glove, etc. If contaminated PPE cannot be removed without causing further injury (except for the respirator, which must be removed), potentially contaminated areas of the individual will be wrapped in plastic, blankets, or available material to help prevent contaminating the inside of the ambulance, medical equipment, and medical personnel.

The IH and/or RCT (depending on the type of contamination) shall accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel. Contaminated PPE will then be removed at the Central Facilities Area medical facility (CFA-1612) and carefully handled to prevent the spread of contamination. Applicable company policies and procedures contain information on proper handling of radionuclide-contaminated wounds.

11.3 Doffing Personal Protective Equipment and Decontamination

Personnel decontamination will likely be limited to doffing of PPE following decontamination tasks. However, some preliminary surface decontamination of protective clothing may be required if it is grossly contaminated and the potential for the generation of airborne radioactivity or organic vapor emissions exists. This will involve assistance from other personnel inside the contamination area and at the doffing location as described below. The ultimate goal of all decontamination methods is to effectively and efficiently isolate the source of contamination through removal of protective clothing and containment in a sealed bag or waste container.

If contamination is detected on outer PPE layers, **careful removal of these outer PPE layers will generally isolate over 99% of surface contamination** and this will serve as the primary decontamination method if protective clothing is contaminated. Removal of contaminated protective clothing using standard radiological doffing techniques (rolling outer surfaces inward and from top to bottom while being removed) provides the most effective method for containing and isolating the contaminants and greatly reduces the potential for exposure to other personnel who would be put at risk of cross-contamination from other decontamination methods (washing, brushing, etc.).

If the protective clothing also is worn as an anticontamination layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted sequence. All PPE will be placed in the appropriately labeled waste-disposal containers. Doffing and any required decontamination will take place at the designated work area boundary or in a contamination radiological buffer area or step-off pad (if a radiological-contamination area is established). If exiting a radiologically controlled area, personnel will conduct the proper personal survey, as stated in the RWP.

A general approach for doffing modified Level D, Level C, or modified Level C PPE is described below. However, there is no one doffing strategy that works for all circumstances. Modifications to this approach are appropriate if project conditions change or at the discretion of the HSO in consultation with the IH and RadCon personnel. Both radiological and nonradiological hazards will be evaluated, as applicable.

11.3.1 Modified Level D Personal Protective Equipment Doffing and Decontamination

Modified Level D protective clothing (Tyvek coveralls, booties, etc.) will be doffed following standard radiological removal techniques and will constitute the initial decontamination step. If the protective clothing is also being worn as an anticontamination layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted doffing sequence. All PPE will be placed in the appropriately labeled waste container(s) disposal. Doffing and any required decontamination will take

place at the contamination radiological buffer area/step-off pad boundary (if a radiological contamination area is established). Doffing will be followed by conducting a personal contamination survey, as stated in the RWP.

11.3.2 Level C Personal Protective Equipment Doffing and Decontamination

If respiratory protection is worn in conjunction with protective clothing (e.g., Level C PPE), the modified Level D sequence will be followed with one additional step. Following protective-clothing doffing, respirators will be removed and placed in a separate container. Doffing and any required decontamination will take place at the designated work area boundary or in a radiological contamination buffer area, or step-off pad if a radiological-contamination area is established. If exiting a radiological contamination area, personnel will conduct the proper personal survey, as stated in the RWP.

11.4 Personnel Radiological Contamination Monitoring

Radiological surveys (with hand-held detectors and automated whole-body counters) may be required before exiting INTEC area, as determined appropriate by RadCon personnel or as stated in the RWP. The purpose of this hand-held instrument survey is to detect surface contamination. An automated whole-body survey using a personal contamination monitor station (or equivalent) must still be conducted before using designated eating or smoking areas. If required, this survey will be conducted using an existing personal contamination monitor or other available hand-held instrument as directed by RadCon personnel.

11.5 Storage and Disposal of Operational Waste Materials

Waste generated from decontamination and other VES-SFE-20 Phase I and II activities will be properly characterized, stored, and disposed of in accordance with applicable company manuals, available Waste Disposal and Disposition Forms, and as stated in the WMP.

11.6 Sanitation and Waste Minimization

Project personnel will use washroom and restroom facilities located at INTEC. Potable water and soap are available at INTEC for personnel to wash their hands and faces.

Industrial waste materials will not be allowed to accumulate at the project site. Appropriate containers for industrial waste will be maintained at the project site. Personnel should make every attempt to minimize waste through judicious use of consumable materials. All personnel are expected to make good housekeeping a priority at the project site.

12. RECORDKEEPING REQUIREMENTS

This section lists the recordkeeping requirements necessary for this project.

12.1 Industrial Hygiene and Radiological Monitoring Records

The assigned IH will record airborne monitoring and sampling data (both area and personal) collected for project exposure assessments in the INEEL Hazards Assessment and Sampling System database. All monitoring and sampling equipment will be maintained and calibrated in accordance with INEEL procedures and the manufacturer specifications. IH airborne monitoring and sampling exposure assessment data are treated as limited access information and maintained by the IH in accordance with applicable company manuals and procedures.

The INTEC-assigned RCT maintains a logbook of radiological monitoring, daily project operational activities, and instrument calibrations where instruments were used to document detection levels or conduct field screening of samples. Radiological monitoring records are maintained in accordance with applicable company manuals.

All other health, safety, and radiological records including inspections will be maintained in accordance with the appropriate and applicable requirements as identified in applicable company manuals and applicable INTEC supplements.

12.2 Records Management

The Administrative Record and Document Control office organizes and maintains data and reports generated by field activities. The Administrative Record and Document Control office maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records. Copies of project plans, this HASP, the quality program plan, the Quality Assurance Project Plan, and other documents pertaining to these operations are maintained in the project file by the Administrative Record and Document Control office.

The INTEC-assigned RCT maintains a logbook of all radiological monitoring, daily site operational activities, and instrument calibrations where instruments were used to document detection levels or conduct field screening of samples. Radiological monitoring records are maintained according to applicable company policies and procedures.

The assigned IH will record airborne monitoring and/or sampling data (both area and personal) and input the information into the Hazards Assessment and Sampling System if required to be collected. All monitoring and sampling equipment shall be maintained and calibrated per BBWI procedures and the manufacturer's specifications. Industrial hygiene airborne monitoring and sampling data are treated as limited access information and maintained by the IH per BBWI applicable manuals and procedures.

All additional project records will be maintained in accordance with applicable federal, state, companywide manuals, and INTEC-specific supplementals.

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